SITE HEALTH AND SAFETY PLAN (HASP)

Prepared by: Doug Ogilvie	**W.O. Number:** 20064-~~024~~-100-1030 050 **Date:** 08 August 2000
Project Identification Office: VHI Site Name: H.O.D. Landfill Client: U.S. EPA RAC Work Location Address: Antioch, IL	**Site History:** *The H.O.D. Landfill is an inactive landfill closed in 1989. The site is located in the eastern section of Antioch, Lake County, Illinois. The site consists of two separate landfill areas encompassing approximately 51 acres. Refer to the PRP contractor's HASP (prepared by RMT, Inc.)*

Scope of Work:
The scope of work includes oversight of 1) installation of site erosion controls, 2) site grading, 3) waste relocation, 4) confirmation sampling of waste relocation areas, 5) installation/rehabilitation of extraction wells, 6) construction and installation of LFG and leachate piping, blower/flare station, leachate tank and loadout facility, access roads, and perimeter fence/access gates, 7) placement of topsoil, seed, and mulch, 8) monitoring and sampling of groundwater, leachate, landfill gas, surface water, and ambient air, 9) installation of landfill gas probes, and 10) site visits.

☐ Site visit only; site HASP not necessary. List personnel here and sign off below:

Regulatory Status:

Site regulatory status:

CERCLA/SARA	RCRA	Other Federal Agency
☒ U.S. EPA	☐ U.S. EPA	☐ DOE
☐ State	☐ State	☐ USACE
☒ NPL Site	NRC	☐ Air Force
☒ OSHA	☐ 10 CFR 20	☐ _____

☒ Hazard Communication (Req'd See Attachment D)
☒ 1910 ☒ 1926 ☐ State

☒ Safety Officer Manual (Required to be On-Site)
Based on the Hazard Assessment and Regulatory Status, determine the Standard HASP(s) applicable to this project. Indicate below which Standard HASP will be used and append the appropriate pages of this form along with the Standard Plan.

☐ Stack Test	☐ _____
☐ Air Emissions	☐ _____
☐ Asbestos	☐ _____
☐ Industrial Hygiene	☐ _____
☐ _____	☐ _____

Review and Approval Documentation:

Reviewed by:
SO/DSM/CHS — Deane Walker (for T. Balla) — Deane E. Walker, CSP — Date: 8/15/00
Name (Print) — Signature

Other — _____ — _____ — Date: _____
Name (Print) — Signature

Approved by:
Project Manager — Omprakash S. Patel — [signature] — Date: 8/16/00
Name (Print) — Signature

Hazard Assessment and Equipment Selection:

In accordance with WESTON's Personal Protective Equipment Program and 29 CFR 1910.132, at the site prior to personnel beginning work, the SHSC and/or the Site Manager have evaluated conditions and verified that the personal protective equipment selection outlined within this HASP is appropriate for the hazards known or expected to exist. (Refer to Safety Officer Manual Section 2, Personal Protection Program, for guidance.)

☒ SHSC ☐ Site Manager — Doug Ogilvie — _____ — Date: _____
Name (Print) — Signature

Project start date: 08/18/2000 End date: 04/30/2001	This site HASP **must** be **reissued/reapproved** for any activities conducted after: Date: 04/30/2001	Amendment date(s) By: 1. 2. 3. 4. 5.

WESTON REPRESENTATIVES

Organization/Branch	Name/Title	Address	Telephone
MW Division	Dean Geers / Program Manager	750 E. Bunker Ct., Suite 500 Vernon Hills, IL 60061	(847) 918-4013
MW Division	Om Patel / Site Manager	same as above	(847) 918-4051
MW Division	Doug Ogilvie	same as above	(847) 918-4122

Roles and Responsibilities: Dean Geers will act as overall client contact with the US EPA. Om Patel will manage the daily project activities and act as the in-office client contact. Doug Ogilvie will be the SHSC/field representative and the in-field client contact.

WESTON SUBCONTRACTORS

Organization/Branch	Name/Title	Address	Telephone
Environmental Design International, Inc.	Mr. Joe Corns / Ms. Elaine Petkovsek	200 S. Michigan Ave. Chicago, IL 60604	(312) 356-5400

Roles and Responsibilities:

Shared oversight (field representative) responsibilities with WESTON.

SITE-SPECIFIC HEALTH AND SAFETY PERSONNEL

The Site Health and Safety Coordinator (SHSC) for activities to be conducted at this site is: Doug Ogilvie

The SHSC has total responsibility for ensuring that the provisions of this Site HASP are adequate and implemented in the field.

Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, the personnel assigned as SHSCs are experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120.

Qualifications: 40-hour OSHA HAZWOPER Training, annual refreshers, 8-hour SHSC Training, 10-hour OSHA Construction Safety Training, C-S/B-T, First Aid, CPR and BBP current .

Designated alternates include: Om Patel, Steve Ryan, Gopa Nair

HEALTH AND SAFETY EVALUATION

Hazard Assessment

Background Review: ☒ Complete ☐ Partial If partial why?

Activities Covered Under This Plan:

No.	Task/Subtask	Description	Schedule
1		Site Visits	Ongoing through April 2001
		Oversight of the following activities:	
2		Installation of Site Erosion Controls	1 week
3		Site Grading	2 weeks
4		Waste Relocation	3 weeks
5		Confirmation Sampling of Waste Relocation Areas	1 week
6		Installation/Rehabilitation of Extraction Wells	3 weeks
7		Construction and Installation of LFG and Leachate Piping, Blower/Flare Station, Leachate Tank and Loadout Facility, Access Roads, and Perimeter Fences/Access Gates	6 weeks
8		Placement of Topsoil, Seed, and Mulch	1 week
9		Monitoring and Sampling of Groundwater, Leachate, Landfill Gas, Surface Water, and Ambient Air	Ongoing through April 2001
10		Installation of Landfill Gas Probes	1 week

Types of Hazards:

1 Numbers refer to one of the following hazard evaluation forms. Complete hazard evaluation forms for each appropriate hazard class.

Physiochemical 1

- ☒ Flammable
- ☒ Explosive
- ☐ Corrosive
- ☐ Reactive
- ☐ O_2 Rich
- ☐ O_2 Deficient

Chemically Toxic 1

- ☒ Inhalation ☒ Carcinogen
- ☒ Ingestion ☐ Mutagen
- ☒ Contact ☐ Teratogen
- ☒ Absorption
- ☒ OSHA 1910.1000 Substance (Air Contaminants)
- ☒ OSHA Specific Hazard Substance Standard (Refer to following page for listing)

Radiation 3

Ionizing:

- ☐ Internal exposure
- ☐ External exposure

Non-ionizing:

- ☐ UV ☐ IR
- ☐ RF ☐ MicroW
- ☐ Laser

Biological 2

- ☐ Etiological Agent
- ☒ Other (plant, insect, animal)

☒ Physical Hazards 4

- ☒ Construction Activities

Source/Location of Contaminants and Hazardous Substances:	
Directly Related to Tasks	**Indirectly Related to Tasks — Nearby Process(es) That Could Affect Team Members:**
☒ Air	☒ Client Facility/WESTON Work Location
☒ Other Surface/sediments	☐ Nearby Non-Client Facility
☒ Groundwater	Describe: Construction Traffic
☒ Soil	
☒ Surface Water	☒ Have activities (task[s]) been coordinated with facility?
☐ Sanitary Wastewater	Coordinated with the PRP consultant.
☐ Process Wastewater	
☐ Other _____	

HEALTH AND SAFETY EVALUATION — 1 CHEMICAL HAZARDS OF CONCERN

☐ N/A

Chemical Contaminants of Concern

Provide the data requested for chemical contaminants on HASP Form 25 or attach data sheets from an acceptable source such as NIOSH pocket guide, condensed chemical dictionary, ACGIH TLV booklet, etc. List chemicals and concentrations below and locate data sheets in Attachment B of this HASP.

☒ N/A

Identify hazardous materials used or on-site and attach Material Safety Data Sheets (MSDSs) for all reagent type chemicals, solutions, or other identified materials that in normal use in performing tasks related to this project could produce hazardous substances. Ensure that all subcontractors and other parties working nearby are informed of the presence of these chemicals and the location of the MSDSs. Obtain from subcontractors and other parties, lists of the hazardous materials they use or have on-site and identify location of the MSDSs here. List chemicals and quantities below and locate MSDSs in Attachment B of this HASP.

Chemical Name	Concentration (if known)	Chemical Name	Quantity
See list in the attached HASP provided by RMT (p. 10-19) NIOSH pages for the main contaminants identified in the PRP HASP are included in Attachment A		Weston will not bring chemicals on site.	

OSHA-SPECIFIC HAZARDOUS SUBSTANCES

The following substances may require specific medical, training, or monitoring based on concentration or evaluation of risk. See the appropriate citation listed under 29 CFR 1910 or 1926 for additional information.

☐ 1910.1001 Asbestos	☐ 1910.1002 Coal tar pitch volatiles	☐ 1910.1003 4-Nitrobiphenyl, etc.	☐ 1910.1004 alpha-Naphthylamine
☐ 1910.1005 [Reserved]	☐ 1910.1006 Methyl chloromethyl ether	☐ 1910.1007 3,3'-Dichlorobenzidine (and its salts)	☐ 1910.1008 bis-Chloromethyl ether
☐ 1910.1009 beta-Naphthylamine	☐ 1910.1010 Benzidine	☐ 1910.1011 4-Aminodiphenyl	☐ 1910.1012 Ethyleneimine
☐ 1910.1013 beta-Propiolactone	☐ 1910.1014 2-Acetylaminofluorene	☐ 1910.1015 4-Dimethylaminoazobenzene	☐ 1910.1016 N-Nitrosodimethylamine
☒ 1910.1017 Vinyl chloride	☐ 1910.1018 Inorganic arsenic	☐ 1910.1025 Lead (Att. FLD# 46)	☐ 1910.1027 Cadmium
☒ 1910.1028 Benzene	☐ 1910.1029 Coke oven emissions	☐ 1910.1043 Cotton dust	☐ 1910.1044 1,2-Dibromo-3-chloropropane
☐ 1910.1045 Acrylonitrile	☐ 1910.1047 Ethylene oxide	☐ 1910.1048 Formaldehyde	☐ 1910.1050 Methylenedianiline
☐ 1910.1051 1,3 Butadiene	☒ 1910.1052 Methylene chloride		

HEALTH AND SAFETY EVALUATION — 2 BIOLOGICAL HAZARDS OF CONCERN

☒ **Poisonous Plants** (FLD 43) Location/Task No(s).: All Tasks Source: ☐ Known ☒ Suspect Route of Exposure: ☐ Inhalation ☐ Ingestion ☒ Contact ☒ Direct Penetration Team Member(s) Allergic: TBD ☐ Yes ☐ No Immunization required: ☐ Yes ☒ No	☒ **Insects** (FLD 43) Location/Task No(s).: All Tasks Source: ☐ Known ☒ Suspect Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration Team Member(s) Allergic: TBD ☐ Yes ☐ No Immunization required: ☐ Yes ☒ No
☒ **Snakes, Reptiles** (FLD 43) Location/Task No(s).: All Tasks Source: ☐ Known ☒ Suspect Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration Team Member(s) Allergic: TBD ☐ Yes ☐ No Immunization required: ☐ Yes ☒ No	☒ **Animals** (FLD 43) Location/Task No(s).: All Tasks Source: ☐ Known ☒ Suspect Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration Team Member(s) Allergic: TBD ☐ Yes ☐ No Immunization required: ☐ Yes ☒ No
FLD 43 — WESTON Biohazard Field Operating Procedures: Att. OP ☒	
☐ **Sewage** Location/Task No(s).: Source: ☐ Known ☐ Suspect *Route of Exposure:* ☐ *Inhalation* ☐ *Ingestion* ☐ Contact ☐ Direct Penetration Team Member(s) Allergic: ☐ Yes ☐ No Immunization required: ☐ Yes ☐ No Tetanus Vaccination within Past 10 yrs: ☐ Yes ☐ No	☐ **Etiologic Agents (List)** Location/Task No(s).: Source: ☐ Known ☐ Suspect *Route of Exposure:* ☐ Inhalation ☐ Ingestion ☐ Contact ☐ Direct Penetration Team Member(s) Allergic: ☐ Yes ☐ No Immunization required: ☐ Yes ☐ No
FLD 44 — WESTON Bloodborne Pathogens Exposure Control Plan – First Aid Procedures: Att. OP ☒	
FLD 45 — WESTON Bloodborne Pathogens Exposure Control Plan – Working with Infectious Waste: Att. OP ☐	

HEALTH AND SAFETY EVALUATION — 4 PHYSICAL HAZARDS OF CONCERN

Phy. Haz. Cond.	Physical Hazard	Attach OP	WESTON OP Titles
Loud noise	Hearing loss/disruption of communication	☒	FLD01 - Noise Protection
Inclement weather	Rain/humidity/cold/ice/snow/lightning	☒	FLD02 - Inclement Weather
Steam heat stress	Burns/displaced oxygen/wet working surfaces	☒	FLD03 - Hot Process - Steam
Heat stress	Burns/hot surfaces/low pressure steam	☐	FLD04 - Hot Process - LT3
Ambient heat stress	Heat rash/cramps/exhaustion/heat stroke	☒	FLD05 - Heat Stress Prevention/Monitoring
Cold stress	Hypothermia/frostbite	☒	FLD06 - Cold Stress
Cold/wet	Trench/paddy/immersion foot/edema	☒	FLD07 - Wet Feet
Confined spaces	Falls/burns/drowning/engulfment/electrocution	☐	FLD08 - Confined Space Entry
Explosive vapors	Thermal burns/impaction/dismemberment	☒	FLD09 - Hot Work
Improper lifting	Back strain/abdomen/arm/leg muscle/joint injury	☒	FLD10 - Manual Lifting/Handling Heavy Objects
Uneven surfaces	Vehicle accidents/slips/trips/falls	☒	FLD11 - Rough Terrain
Poor housekeeping	Slips/trips/falls/punctures/cuts/fires	☒	FLD12 - Housekeeping
Structural integrity	Crushing/overhead hazards/compromised floors	☐	FLD13 - Structural Integrity
Hostile persons	Bodily injury	☒	FLD14 - Site Security
Remote area	Slips/trips/falls/back strain/communication	☒	FLD15 - Remote Area
Improper cyl. handling	Mechanical injury/fire/explosion/suffocation	☐	FLD16 - Pressure Systems - Compressed Gases
Water hazards	Poor visibility/entanglement/drowning/cold stress	☐	FLD17 - Diving
Water hazards	Drowning/heat/cold stress/hypothermia/falls	☐	FLD18 - Operation and Use of Boats
Water hazards	Drowning/frostbite/hypothermia/falls/electrocution	☐	FLD19 - Working Over Water
Vehicle hazards	Struck by vehicle/collision	☒	FLD20 - Traffic
Explosions	Explosion/fire/thermal burns	☐	FLD21 - Explosives
Moving mechanical parts	Crushing/pinch points/overhead hazards/electrocution	☒	FLD22 - Heavy Equipment Operation
Moving mech. parts	Overhead hazards/electrocution	☒	FLD23 - Cranes/Lifting Equipment Operation
Working at elevation	Overhead hazards/falls/electrocution	☒	FLD24 - Aerial Lifts/Manlifts
Working at elevation	Overhead hazards/falls/electrocution	☒	FLD25 - Working at Elevation
Working at elevation	Overhead hazards/falls/electrocution/slips	☒	FLD26 - Ladders
Working at elevation	Slips/trips/falls/overhead hazards	☐	FLD27 - Scaffolding
Trench cave-in	Crushing/falling/overhead hazards/suffocation	☒	FLD28 - Excavating/Trenching
Improper material handling	Back injury/crushing from load shifts	☒	FLD29 - Materials Handling
Physiochemical	Explosions/fires from oxidizing, flam./corr. material	☐	FLD30 - Hazardous Materials Use/Storage
Physiochemical	Fire and explosion	☐	FLD31 - Fire Prevention/Response Plan Required
Physiochemical	Fire	☒	FLD32 - Fire Extinguishers Required
Structural integrity	Overhead/electrocution/slips/trips/falls/fire	☐	FLD33 - Demolition
Electrical	Electrocution/shock/thermal burns	☒	FLD34 - Utilities
Electrical	Electrocution/shock/thermal burns	☒	FLD35 - Electrical Safety
Burns/fires	Heat stress/fires/burns	☐	FLD36 - Welding/Cutting/Burning
Impact/thermal	Thermal burns/high pressure impaction/heat stress	☒	FLD37 - High Pressure Washers
Impaction/electrical	Smashing body parts/pinching/cuts/electrocution	☒	FLD38 - Hand and Power Tools
Poor visibility	Slips/trips/falls	☒	FLD39 - Illumination
Fire/explosion	Burns/impaction	☐	FLD40 - Storage Tank Removal/Decommissioning
Communications	Disruption of communications	☒	FLD41 - Std. Hand/Emergency Signals
Energy/release	Unexpected release of energy	☐	FLD42 - Lockout/Tagout
Drilling hazards	Electrocution/overhead hazards/pinch points	☒	2.5 - Drilling Safety Guide

TASK-BY-TASK RISK ASSESSMENT
(Complete One Sheet for Each Task)

TASK DESCRIPTION

Task 1 Site Visits: General site visits to confirm site conditions prior to and after sampling and construction activities.

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Level D PPE, Notebook, camera, steel-toed boots, appropriate field uniform

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

The H.O.D. Landfill site is a NPL Superfund site with known contaminants. The potential risk of chemical hazards is present.

Physical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Slip, trip and fall and/or inclement weather may be present.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Animals, plants and insects could present a potential threat., see FLD 43

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L

What justifies risk level?

N/A – see PRP HASP

LEVELS OF PROTECTION/JUSTIFICATION

Level D PPE / No construction or sampling activities will occur during general site visits, thus only level D is required.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

buddy system, fld ops 43, 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 14, 15, 20, 22, 28, 29, 32, 34, 35, 37, 38, 39, 41, 44, and drilling safety guide

TASK-BY-TASK RISK ASSESSMENT
(Complete One Sheet for Each Task)

TASK DESCRIPTION

Task 2,3,4,6,7,8,10 – Oversight of construction activities including installation of site erosion controls, site grading, waste relocation, installation/rehabilitation of extraction wells, construction of piping, blower/flare station, leachate tank and loadout facility, access roads, and perimeter fences/access gates, placement of topsoil, seed , and mulch, and the installation of landfill gas probes. *WESTON's role is the oversight and documentation of the above construction activities; no* WESTON personnel will actively participate in the construction activities.

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Level D PPE, Notebook, camera, steel-toed boots, appropriate field uniform

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

The H.O.D. Landfill site is a NPL Superfund site with known contaminants. The potential risk of chemical hazards is present, mainly due to airborne particulates related to construction activities.

Physical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Slip, trip and fall and/or inclement weather may be present. The construction activities may also present some physical hazards (i.e. heavy equipment, drilling hazards, etc.) See FLD's listed in Form 07.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Animals, plants and insects could present a potential threat., see FLD 43

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L

What justifies risk level?

N/A – see PRP HASP

LEVELS OF PROTECTION/JUSTIFICATION

Level D PPE – WESTON is performing only the oversight and documentation of construction activities, and will not actively participate in any construction activities. If site conditions require an upgrade of PPE, WESTON will remain upwind or leave the current work area.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

Buddy system, all applicable Field OP's listed in Form 07.

TASK-BY-TASK RISK ASSESSMENT
(Complete One Sheet for Each Task)

TASK DESCRIPTION

Task 5,9 – Oversight of sampling activities including groundwater, leachate, landfill gas, surface water, ambient air, and confirmation sampling of the waste relocation areas. WESTON's role is the oversight and documentation of the above sampling activities; no WESTON personnel will actively participate in the sampling activities.

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Level D PPE, Notebook, camera, steel-toed boots, appropriate field uniform

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

The H.O.D. Landfill site is a NPL Superfund site with known contaminants. The potential risk of chemical hazards is present, mainly due to airborne particulates, leachate, or vapors accumulated in the wells.

Physical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Slip, trip and fall and/or inclement weather may be present.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Animals, plants and insects could present a potential threat., see FLD 43

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L

What justifies risk level?

N/A – see PRP HASP

LEVELS OF PROTECTION/JUSTIFICATION

Level D PPE – WESTON is performing only the oversight and documentation of sampling activities, and will not actively participate in any sampling activities. If site conditions require an upgrade of PPE, WESTON will remain upwind or leave the current work area.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

Buddy system, all applicable Field OP's listed in Form 07, except FLD's 23-26.

PERSONNEL PROTECTION PLAN

Engineering Controls
Describe Engineering Controls used as part of Personnel Protection Plan:

Task(s)	
2-10	As necessary, all dust control measures will be provided by the PRP contractors.

Administrative Controls
Describe Administrative Controls used as part of Personnel Protection Plan:

Task(s)	
2-10	WESTON will perform all oversight and documentation activities at a safe distance and upwind of work activities; WESTON will remain outside of any posted exclusion zones. WESTON will follow the written PPE and respiratory protection programs outlined in this HASP.

Personal Protective Equipment
Action Levels for Changing Levels of Protection. Refer to HASP Form 13, Site Air Monitoring Program—Action Levels. Define Action Levels for up or down grade for each task:

Task(s)	
1-10	Level D, all tasks, If conditions require greater levels of personal protection, Weston will either leave the area or move upwind of the activity. WESTON or team subcontractors will leave the exclusion zone if sustained measurements above background are measured by monitoring equipment. If the PRP's monitoring is deemed inadequate, WESTON will conduct its own monitoring. WESTON will upgrade PPE as necessary to meet site safety requirements, thus gloves, boot covers and tyveks may be implemented to meet safety requirements. The PRP contractor may require additional levels of PPE for specific tasks.

DESCRIPTION OF LEVELS OF PROTECTION

Level D		Level D Modified
Task(s):		**Task(s):**
☒ Head	hard hat as necessary	☐ Head
☒ Eye and Face	safety glasses	☐ Eye and Face
☒ Hearing	ear plugs, as necessary	☐ Hearing
☐ Arms and Legs Only		☐ Arms and Legs Only
☒ Appropriate Work Uniform	tyvek as necessary	☐ Whole Body
☒ Hand - Gloves	Work and/or surgicals, as necessary	☐ Apron
☒ Foot - Safety Boots		☐ Hand - Gloves
☐ Fall Protection		☐ Gloves
☐ Flotation		☐ Gloves
☒ Other	Boot Covers as necessary	☐ Foot - Safety Boots
		☐ Over Boots

SITE OR PROJECT HAZARD MONITORING PROGRAM

Air Monitoring Instruments

Instrument Selection and Initial Check Record

Reporting Format: ☐ Field Notebook ☐ Field Data Sheets* ☐ Air Monitoring Log ☐ Trip Report ☐ Other

NOTE: All air monitoring to be performed by the PRP contractors (see attached RMT HASP).

Instrument	Task No.(s)	Number Required	Number Received	Checked Upon Receipt	Comment	Initials
☐ CGI				☐		
☐ O_2				☐		
☐ CGI/O_2				☐		
☐ CGI/O_2/tox-PPM, H_2S,H_2S/CO				☐		
☐ RAD				☐		
☐ GM (Pancake)				☐		
☐ NaI (Micro R)				☐		
☐ ZnS (Alpha Scintillator)				☐		
☐ Other _____				☐		
☐ PID				☐		
☐ HNu 10.2				☐		
☐ HNu 11.7				☐		
☐ Photovac, TMA				☐		
☐ OVM				☐		
☐ Other _____				☐		
☐ FID				☐		
☐ Fox 128				☐		
☐ Heath, AID, Other				☐		
☐ RAM, Mini-RAM, Other _____				☐		
☐ Monitox				☐		
Specify: _____				☐		
☐ Personal Sampling				☐		
Specify: _____				☐		
☐ Bio-Aerosol Monitor				☐		
☐ Pump - MSA, Dräeger, Sensidyne				☐		
☐ Tubes/type: _____				☐		
☐ Tubes/type: _____				☐		
☐ Other _____				☐		

*Refer to Attachment E.

SITE AIR MONITORING PROGRAM

Action Levels

These Action Levels, if not defined by regulation, are some percent (usually 50%) of the applicable PEL/TLV/REL. That number must also be adjusted to account for instrument response factors.

	Tasks	Action Level		Action
☒ **Explosive atmosphere**	ALL	Ambient Air Concentration	Confined Space Concentration	
		<10% LEL	0 to 1% LEL	Work may continue. Consider toxicity potential.
		10 to 25% LEL	1 to 10% LEL	Work may continue. Increase monitoring frequency.
		>25% LEL	>10% LEL	Work must stop. Ventilate area before returning.
☒ **Oxygen**	All	Ambient Air Concentration	Confined Space Concentration	
		<19.5% O_2	<19.5% O_2	Leave area. Re-enter only with self-contained breathing apparatus.
		19.5% to 25% O_2	19.5% to 23.5% O_2	Work may continue. Investigate changes from 21%.
		>25% O_2	>23.5% O_2	Work must stop. Ventilate area before returning.
☐ **Radiation**		< 3 times background		Continue work.
		3 times background to < 1 mR/hour		Radiation above background levels (normally 0.01-0.02 mR/hr) signifies possible radiation source(s) present. Continue investigation with caution. Perform thorough monitoring. Consult with a Health Physicist.
		> 1 mrem/hour		Potential radiation hazard. Evacuate site. Continue investigation only upon the advice of Health Physicist.
☒ ***Organic gases and* vapors**	All	PID/FID above background sustained in breathing zone.		Move upwind or leave the area.
☒ **Inorganic gases, vapors, and particulates**	All	Visible dust which is not controlled./supressed by the PRP Contractor		Move upwind of leave the area.

CONTINGENCIES

Emergency Contacts and Phone Numbers

Agency	Contact	Phone Number
Local Medical Emergency Facility (LMF)	St. Therese Medical Center	(847)249-3900
WESTON Medical Emergency Contact	CONTINUUM - Dr. Elyane Theriault	1-800-229-3674
WESTON Health and Safety	Corporate Health and Safety	(610) 701-3000
Antioch Fire Department	dispatcher	911
Antioch Police Department	dispatcher	911
On-Site Coordinator- SHSC	Doug Ogilvie	(847) 918-4000
Client Site Contact	PRP representative	TBD
Site Telephone		
Nearest Telephone	On-site	As above

Local Medical Emergency Facility(s)

Name of Hospital: St. Therese Medical Center

Address: 2615 Washington St. Waukegan, IL	**Phone No.:** (847) 249-3900
Name of Contact: Emergency Room - Charge Nurse	**Phone No.:**

Type of Service: ☐ Physical trauma only ☐ Chemical exposure only ☒ Physical trauma and chemical exposure ☒ Available 24 hours	**Route to Hospital (written detail):** **Exit site. Go south on McMillan Rd. to Rt. 173, go east (left) on Rt. 173 to Rt. 41. Go south (right) on Rt. 41 to the Washington St. exit. Go east on Washington St. for *approximately 1.5 miles to the emergency room entrance* which is located on the south side of Washington St.**	***Travel time from site:*** 15-20 min **Distance to hospital:** 10 miles **Name/no. of 24-hr ambulance service:** **Antioch Rescue / 911**

Secondary or Specialty Service Provider

Name of Hospital: St. Therese Area Treatment Satellite

Address: 37809 N. Route 59 Lake Villa, IL	**Phone No.: (847)356-6600**
Name of Contact: Doctor on call	**Phone No.:**

Type of Service: ☒ *Physical trauma only* ☐ Chemical exposure only ☐ Physical trauma and chemical exposure ☐ Available 24 hours Facility is Available 9:00 a.m. to 8:00 p.m.	**Route to Hospital (written detail):** **Refer to RMT HASP (attached)**	**Travel time from site:** 10 min **Distance to hospital:** 5-6 miles **Name/no. of 24-hr ambulance service:** **Antioch Rescue / 911**

Figure 1. Route to Hospital

(Draw map to hospital here if space permits or attach on next sheet.)

MAPQUEST

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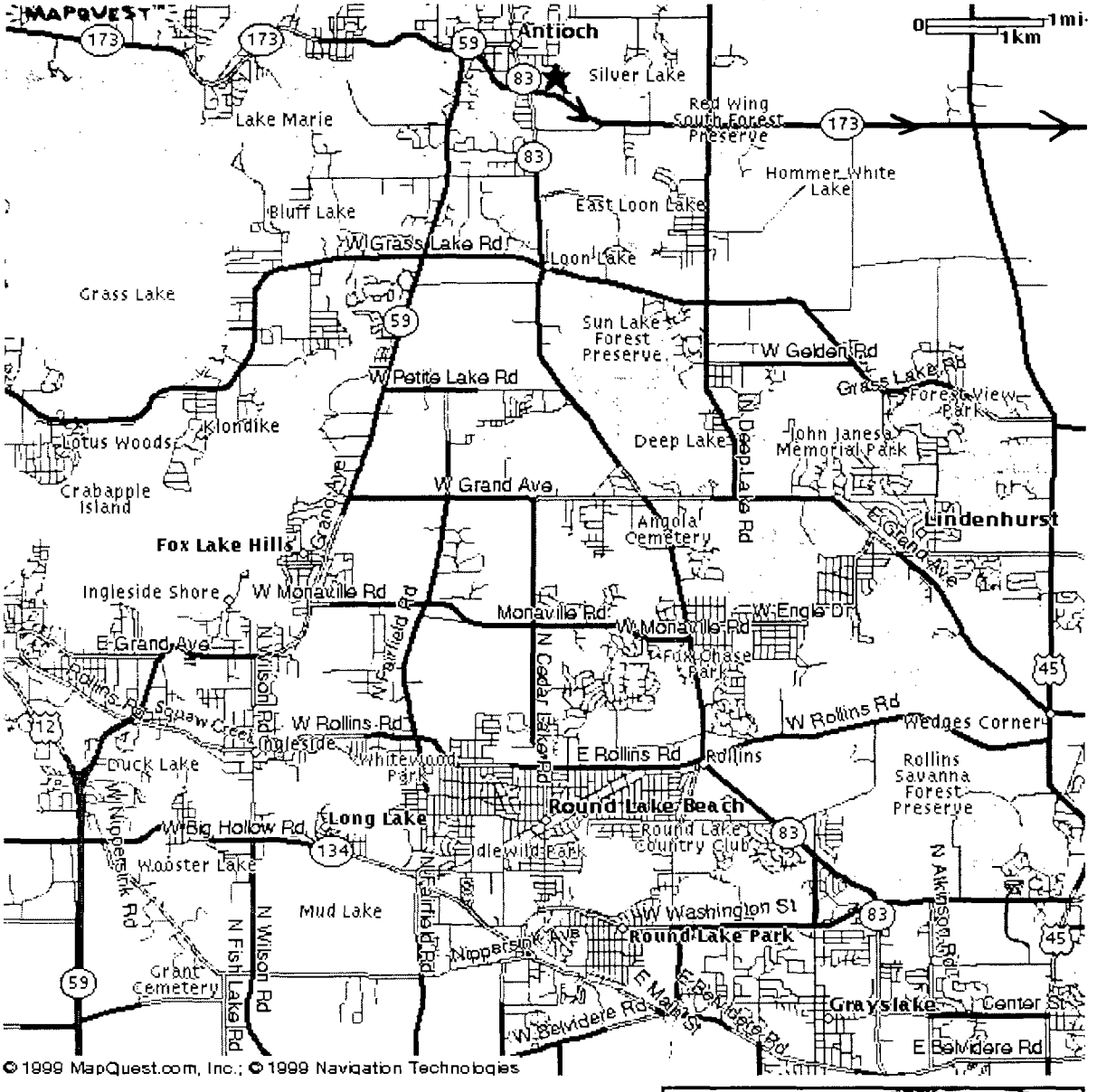
MCMILLEN RD, ANTIOCH, IL, 60002, US



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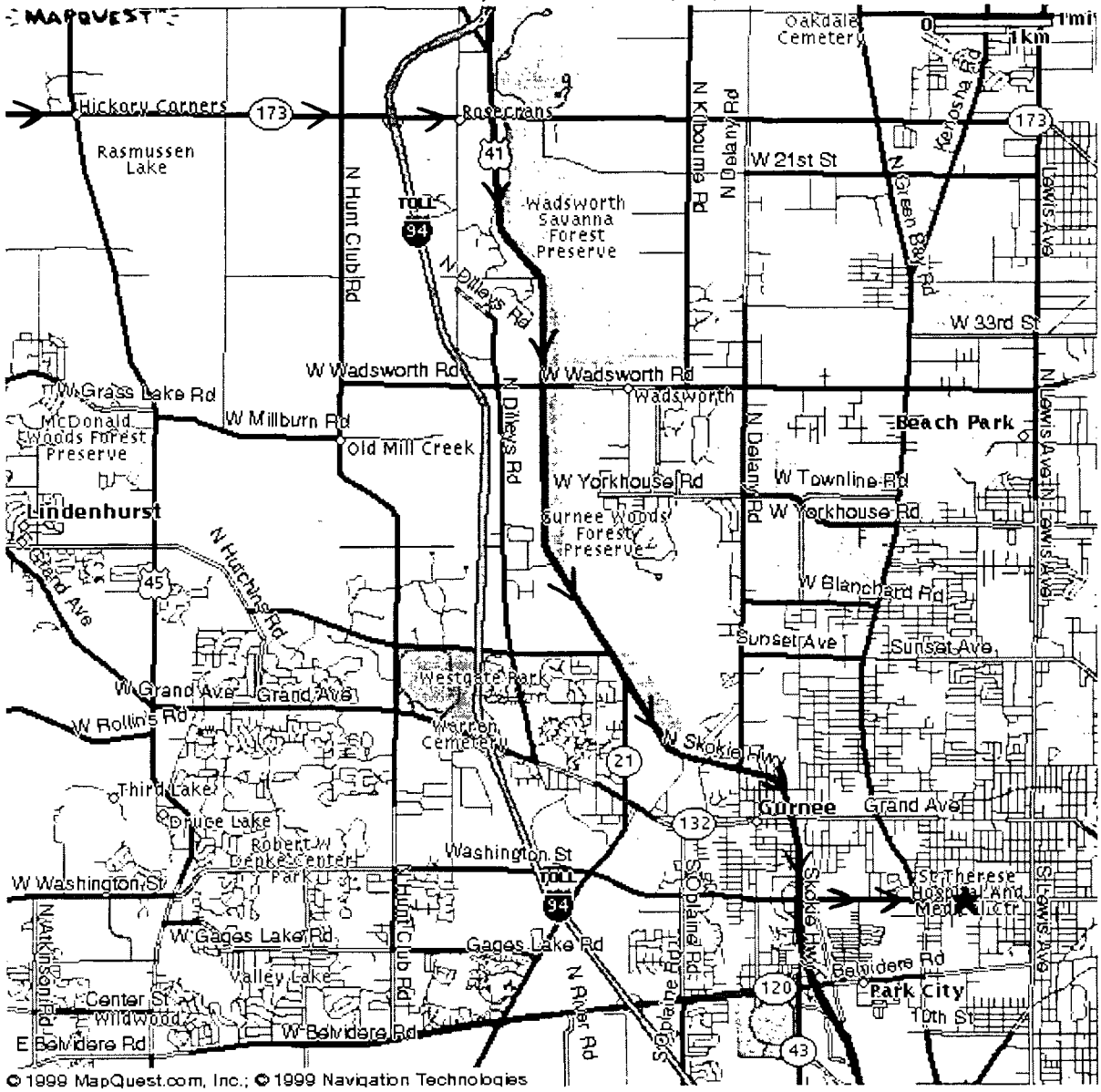
2615 WASHINGTON ST, WAUKEGAN, IL, 60085-4980, US



Return to Map | Get New Map

CONTINGENCIES

Response Plans

Medical - General	First Aid Kit:	Type field kit BBP kit	Location Weston Vehicle	Special First-Aid Procedures: Cyanides on-site ☐ Yes ☒ No If yes, contact LMF. Do they have antidote kit? ☐ Yes ☐ No
Provide first aid, if trained; assess and determine need for further medical assistance. Transport or arrange for transport after appropriate decontamination.	Eyewash required ☒ Yes ☐ No	Type small bottle	Location Weston Vehicle	**HF** on-site ☐ Yes ☒ No If yes, need neutralizing ointment for first-aid kit. Contact LMF.
	Shower required ☐ Yes ☒ No	Type	Location	

Plan for Response to Spill/Release		**Plan for Response to Fire/Explosion**		**Fire Extinguishers**
In the event of a spill or release, ensure safety, assess situation, and perform containment and control measures, as appropriate.	a. Cleanup per MSDSs if small; or sound alarm, call for assistance, notify Emergency Coordinator b. Evacuate to pre-determined safe place c. Account for personnel d. Determine if team can respond safely e. Mobilize per Site Spill Response Plan	In the event of a fire or explosion, ensure personal safety, assess situation, and perform containment and control measures, as appropriate:	a. Sound alarm and call for assistance, notify Emergency Coordinator b. Evacuate to predetermined safe place c. Account for personnel d. Use fire extinguisher only if safe and trained in its use e. Stand by to inform emergency responders of materials and conditions	Type/Location ABC / Weston Vehicle / / / / / /

Description of Spill Response Gear	Location	Description (Other Fire Response Equipment)	Location

Plan to Respond to Security Problems

None anticipated. In the event, however, avoid confrontation, evaluate situation, and call police if necessary

WESTON will be on-site with PRP contractors. WESTON personnel will check with the PRP contractor personnel upon entering and leaving the site. Weston personnel or team subcontractor will not move around on site without PRP contractor personnel.

DECONTAMINATION PLAN

Personnel Decontamination

Consistent with the levels of protection required, step-by-step procedures for personnel decontamination for each level of protection are attached.

Levels of Protection Required for Decontamination Personnel

The levels of protection required for personnel assisting with decontamination will be:

☐ Level B ☐ Level C ☒ Level D

Modifications include:

Disposition of Decontamination Wastes

Provide a description of waste disposition, including identification of storage area, hauler, and final disposal site, if applicable:

PPE waste will be disposed of along with the PRP contractor's wastes. The PRP contractor proposes to establish an exclusion zone for equipment removal and PPE disposal. The used PPE will be placed in disposable trash bags and then into an appropriate container (covered roll-off box).

Equipment Decontamination

A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:

The PRP contractor's FSAP and HASP address the decon procedures for sampling, drilling, and heavy machinery equipment.

Sampling Equipment Decontamination

Sampling equipment will be decontaminated in accordance with the following procedure:

Refer to the PRP contractor's FSAP and HASP.

LEVEL D/MODIFIED LEVEL D DECONTAMINATION PLAN

Check indicated functions or add steps, as necessary:

Function	Description of Process, Solution, and Container
☐ Segregated equipment drop	WESTON will follow the PRP contractor decontamination policy.
☐ Boot cover and glove wash	
☐ Boot cover and glove rinse	
☐ Tape removal - outer glove and boot	
☒ Boot cover removal	As necessary
☒ Outer glove removal	As necessary
HOTLINE	
☐ Suit/safety boot wash	
☐ Suit/boot/glove rinse	
☐ Safety boot removal	
☒ Suit removal	As necessary
☐ Inner glove wash	
☐ Inner glove rinse	
☒ Inner glove removal	As necessary
☐ Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☒ Field wash	Wash hands with soap, as necessary.
☐ Redress	

Disposal Plan, End of Day:

Dealt with by PRP contractor.

Disposal Plan, End of Week:

as above

Disposal Plan, End of Project:

as above

SITE PERSONNEL AND CERTIFICATION STATUS

WESTON

Name: Om Patel **Title:** Project Manager **Task(s):** 1-10 **Certification Level or Description:** D-S / non-med [X] Medical Current [X] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** Doug Ogilvie **Title:** Project Engineer/ SHSC **Task(s):** 1-10 **Certification Level or Description:** C-S [X] Medical Current [X] Training Current [X] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)
Name: Steve Ryan **Title:** Project Engineer **Task(s):** 1-10 **Certification Level or Description:** D-S [X] Medical Current [X] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** Gopa Nair **Title:** Project Engineer **Task(s):** 1-10 **Certification Level or Description:** C-S [X] Medical Current [X] Training Current [X] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** [ ] Medical Current [ ] Training Current [ ] Fit Test Current (Qual.) [ ] Fit Test Current (Quant.)

TRAINING CURRENT - Training: All personnel, including visitors, entering the exclusion or contamination reduction zones must have certifications of completion of training in accordance with OSHA 29 CFR 1910, 29 CFR 1926, or 29 CFR 1910.120.

FIT TEST CURRENT - Respirator Fit Testing: All persons, including visitors, entering any area requiring the use or potential use of any negative pressure respirator must have had, as a minimum, a qualitative fit test, administered in accordance with OSHA 29 CFR 1910.134 or ANSI, within the last 12 months.

MEDICAL CURRENT - Medical Monitoring Requirements: All personnel, including visitors, entering the exclusion or contamination reduction zones must be certified as medically fit to work and to wear a respirator, if appropriate, in accordance with 29 CFR 1910, 29 CFR 1926/1910, or 29 CFR 1910.120.

The Site Health and Safety Coordinator is responsible for verifying all certifications and fit tests.

SITE PERSONNEL AND CERTIFICATION STATUS

Subcontractor's Health and Safety Program Evaluation

Name of Subcontractor: Environmental Design International, Inc.

Activities To Be Conducted by Subcontractor: Shared oversight (field representative) responsibilities with WESTON.

Evaluation Criteria

Medical program meets OSHA/WESTON criteria ☐ Acceptable ☐ Unacceptable Comments:	Personal protective equipment available ☐ Acceptable ☐ Unacceptable Comments:	On-site monitoring equipment available, calibrated, and operated properly ☐ Acceptable ☐ Unacceptable Comments:
Safe working procedures clearly specified ☐ Acceptable ☐ Unacceptable Comments:	Training meets OSHA/WESTON criteria ☐ Acceptable ☐ Unacceptable Comments:	Emergency procedures ☐ Acceptable ☐ Unacceptable Comments:
Decontamination procedures ☐ Acceptable ☐ Unacceptable Comments:	General health and safety program evaluation ☐ Acceptable ☐ Unacceptable Comments:	Additional comments: ☐ Subcontractor has agreed to and will conform with the WESTON HASP for this project. ☐ Subcontractor will work under his own HASP, which has been accepted by project PM.

Evaluation Conducted by: **Date:**

Subcontractor

Name: **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

HEALTH AND SAFETY PLAN APPROVAL/SIGNOFF FORM

Site Name: H.O.D. Landfill	WO#: 20064-024-100-1030
Address: Antioch, IL	

I understand, agree to, and will conform with the information set forth in this Health and Safety Plan (and attachments) and discussed in the personnel health and safety briefing(s).

Name	Signature	Date

ATTACHMENT A

CHEMICAL CONTAMINANTS DATA SHEETS

(Attach completed HASP Form 25
[H&S—1 Chemical Hazards Form]
or attach appropriate data sheets.)

SEE ALSO ATTACHED PRP HASP AS NECESSARY

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr, flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Hydrogen sulfide H_2S 7783-06-4 MX1225000 1053 117	Hydrosulfuric acid, Sewer gas, Sulfureted hydrogen 1 ppm = 1.40 mg/m³	NIOSH C 10 ppm (15 mg/m³) [10-min] OSHA† C 20 ppm 50 ppm (10-min max peak)	100 ppm	Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & can NOT be relied upon to warn of the continuous presence of H_2S. Shipped as a liquefied compressed gas.]	MW: 34.1 BP: -77°F Sol: 0.4% Fl.P: NA (Gas) IP: 10.46 eV	VP: 17.6 atm FRZ: -122°F UEL: 44.0% LEL: 4.0% RGasD: 1.19 Flammable Gas	Strong oxidizers, strong nitric acid, metals	Char; NH_2OH/H_2O_2; IC; IV [#6013]
Hydroquinone $C_6H_4(OH)_2$ 123-31-9 MX3500000 2662 153	p-Benzenediol, 1,4-Benzenediol, Dihydroxybenzene, 1,4-Dihydroxybenzene, Quinol	NIOSH C 2 mg/m³ [15-min] OSHA 2 mg/m³	50 mg/m³	Light-tan, light-gray, or colorless crystals	MW: 110.1 BP: 545°F Sol: 7% Fl.P: 329°F (Molten) IP: 7.95 eV Sp.Gr: 1.33 Combustible Solid, dust cloud may explode if ignited in an enclosed area	VP: 0.00001 mm MLT: 338°F UEL: ? LEL: ?	Strong oxidizers, alkalis	Filter; CH_3COOH; HPLC/UVD; IV [#5004]
2-Hydroxypropyl acrylate CH_2=$CHCOOCH_2CHOHCH_3$ 999-61-1 AT1925000	HPA, β-Hydroxypropyl acrylate, Propylene glycol monoacrylate 1 ppm = 5.33 mg/m³	NIOSH 0.5 ppm (3 mg/m³) [skin] OSHA† none	N.D.	Clear to light-yellow liquid with a sweetish, solvent odor.	MW: 130.2 BP: 376°F Sol: ? Fl.P: 149°F IP: ? Sp.Gr: 1.05 Class IIIA Combustible Liquid	VP: ? FRZ: ? UEL: ? LEL: 1.8%	Water [Note: Can become unstable at high temperatures & pressures or may react with water with some release of energy, but not violently.]	None available
Indene C_9H_8 95-13-6 NK8225000	Indonaphthene 1 ppm = 4.75 mg/m³	NIOSH 10 ppm (45 mg/m³) OSHA† none	N.D.	Colorless liquid [Note: A solid below 29°F.]	MW: 116.2 BP: 359°F Sol: Insoluble Fl.P: 173°F IP: 8.81 eV Sp.Gr: 0.997 Class IIIA Combustible Liquid	VP: ? FRZ: 29°F UEL: ? LEL: ?	None reported [Note: Polymerizes & oxidizes on standing. It has exploded during nitration with (H_2SO_4 + HNO_3).]	None available

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Health hazards: Symptoms (See Table 5)	Health hazards: First aid (See Table 6)	Health hazards: Target organs (See Table 5)
Skin: Frostbite Eyes: Frostbite Wash skin: N.R. Remove: When wet (flamm) Change: N.R. Provide: Frostbite [Hydrogen sulfide]	NIOSH 100 ppm: PAPRS/GMFS/SA*/SCBAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFS/SCBAE	Inh Con	Irrit eyes, resp sys, apnea, coma, convuls, conj, eye pain, lac, photo, corn vesic; dizz, head, fig, irrity, insom; GI dist	Eye: Frostbite Skin: Frostbite Breath: Resp support	Eyes, resp sys, CN[illegible]
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash (>7%) [Hydroquinone]	NIOSH/OSHA 50 mg/m³: PAPRD£/HiEF/SAT:CF£/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: HiEF/SCBAE	Inh Ing Con	Irrit eyes, conj, kera, CNS excitement, colored urine, nau, dizz, suffocation, rapid breath, musc twitch, delirium, collapse; skin irrit, sens derm	Eye: Irr immed Skin: Water flush Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sy[illegible], CNS
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. Provide: Eyewash, quick drench [2-Hydroxypropyl acrylate]	TBAL	Inh Abs Ing Con	Irrit eyes, skin, resp sys, eye, skin burns, cough, dysp	Eye: Irr immed Skin: Soap flush immed Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contam Change: N.R. [Indene]	TBAL	Inh Ing Con	In animals: irrit eyes, skin, muc memb, derm, skin sens, chemical pneu (aspir liq), liver, kidney, spleen inj	Eye: Irr immed Skin: Soap wash Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys, liver, kidneys, spleen

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr, flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Paraffin wax fume C_nH_{2n+2} 8002-74-2 RV0350000	Paraffin fume, Paraffin scale fume	NIOSH 2 mg/m³ OSHA† none	N.D.	Paraffin wax is a white to slightly yellowish, odorless solid. [Note: Consists of a mixture of high molecular weight hydrocarbons (e.g., $C_{20}H_{42}$).]	MW: 350-420 BP: ? Sol: Insoluble Fl.P: 390°F IP: ? Sp.Gr: 0.88-0.92 Combustible Solid	VP: ? MLT: 115-154°F UEL: ? LEL: ?	None reported	None available
Paraquat (Paraquat dichloride) $CH_3(C_5H_4N)_2CH_3 \cdot 2Cl$ 1910-42-5 DW2275000	1,1'-Dimethyl-4,4'-bipyridinium dichloride, N,N'-Dimethyl-4,4'-bipyridinium dichloride, Paraquat chloride, Paraquat dichloride [Note: Paraquat is a cation ($C_{12}H_{14}N_2^{++}$; 1,1-dimethyl-4,4'-bipyridinium ion); the commercial product is the dichloride salt of paraquat.]	NIOSH 0.1 mg/m³ (resp) [skin] OSHA† 0.5 mg/m³ (resp) [skin]	1 mg/m³	Yellow solid with a faint, ammonia-like odor [herbicide]	MW: 257.2 BP: Decomposes Sol: Miscible Fl.P: NA IP: ? Sp.Gr: 1.24 Noncombustible Solid	VP: <0.0000001 mm MLT: 572°F (Decomposes) UEL: NA LEL: NA	Strong oxidizers, alkylaryl-sulfonate wetting agents [Note: Corrosive to metals. Decomposes in presence of ultraviolet light.]	Filter, Water, HPLC/UVD, IV [#5003]
Parathion $(C_2H_5O)_2P(S)OC_6H_4NO_2$ 56-38-2 TF4550000 2783 152	O,O-Diethyl-O(p-nitrophenyl) phosphorothioate, Diethyl parathion, Ethyl parathion, Parathion-ethyl	NIOSH 0.05 mg/m³ [skin] OSHA 0.1 mg/m³ [skin]	10 mg/m³	Pale-yellow to dark-brown liquid with a garlic-like odor. [Note: A solid below 43°F. Pesticide that may be absorbed on a dry carrier.]	MW: 291.3 BP: 707°F Sol: 0.001% Fl.P(oc): 392°F IP: ? Sp.Gr: 1.27 Class IIIB Combustible Liquid	VP: 0.00004 mm FRZ: 43°F UEL: ? LEL: ?	Strong oxidizers, alkaline materials	OVS-2, Toluene/Acetone; GC/FPD; IV [#5600, Organophosphorus Pesticides]
* Particulates not otherwise regulated	"Inert" dusts, Nuisance dusts, PNOR [Note: Includes all inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically in 1910.1000.]	NIOSH See Appendix D OSHA 15 mg/m³ (total) 5 mg/m³ (resp)	N.D.	Dusts from solid substances without specific occupational exposure standards	Properties vary depending upon the specific solid		Varies	Filter, none, Grav, IV [Particulates NOR: #0500 (total), #0600 (resp)]

Personal protection and sanitation (See Table 3)		Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Health hazards: Symptoms (See Table 5)	Health hazards: First aid (See Table 6)		Health hazards: Target organs (See Table 5)
Skin: Eyes: Wash skin: Remove: Change:	N.R. Prevent eye contact N.R. N.R. N.R.	TBAL	Inh Con	Irrit eyes, skin, resp sys, discomfort, nau	Eye Breath	Irr immed Resp support	Eyes, skin, resp sys
[Paraffin wax fume]							
Skin Eyes Wash skin Remove Change Provide	Prevent skin contact Prevent eye contact When contam When wet or contam N.R. Quick drench	NIOSH 1 mg/m³: CCROVDMFu*/PAPROVDMFu*/SA*/SCBAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHiE/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, nose, throat, resp sys; epis, derm, fingernail damage, irrit GI tract, heart, liver, kidney damage	Eye Skin Breath Swallow	Irr immed Water flush immed Resp support Medical attention immed	Eyes, skin, resp sys, heart, liver, kidneys, GI tract
[Paraquat]							
Skin: Eyes: Wash skin: Remove: Change: Provide:	Prevent skin contact Prevent eye contact When contam When wet or contam Daily Eyewash, Quick drench	NIOSH 0.5 mg/m³: CCROVDMFu/SA 1.25 mg/m³: SA:CF/PAPROVDMFu 2.5 mg/m³: CCRFOVHiE/SAT:CF/PAPRTOVHiE/SCBAF/SAF 10 mg/m³: SA:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHiE/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, resp sys, miosis, rhin, head, chest tight, wheez, lar spasm, saliv, cyan; anor, nau, vomit, abdom cramps, diarr; sweat, musc fasc, weak, para, gidd, conf, ataxia; convuls, coma; low BP; card irreg	Eye Skin Breath Swallow	Irr immed Soap wash immed Resp support Medical attention immed	Eyes, skin, resp sys, CNS, CVS, blood [illegible]
[Parathion]							
Skin: Eyes Wash skin Remove Change	N.R. N.R. N.R. N.R. N.R.	TBAL	Inh Con	Irrit eyes, skin, throat, upper resp sys	Eye Breath	Irr immed Fresh air	Eyes, skin, resp sys
[Particulates not otherwise regulated] *							

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties		Incompatibilities and reactivities	Measurement method (See Table 1)
					MW, BP, SOL FLP, IP, Sp, Gr, flammability	VP, FRZ UEL, LEL		
Benzene ✱ C_6H_6 71-43-2 CY1400000 1114 130	Benzol, Phenyl hydride 1 ppm = 3.19 mg/m³	NIOSH Ca 0.1 ppm ST 1 ppm See Appendix A OSHA [1910 1028] 1 ppm ST 5 ppm See Appendix F	Ca [500 ppm]	Colorless to light-yellow liquid with an aromatic odor [Note: A solid below 42°F.]	MW 78.1 BP 176°F Sol 0.07% FLP 12°F IP 9.24 eV Sp Gr 0.88 Class IB Flammable Liquid	VP 75 mm FRZ 42°F UEL 7.8% LEL 1.2%	Strong oxidizers, many fluorides & perchlorates, nitric acid	Char, CS, GC/FID; IV [#1500, Hydrocarbons] [Also #2709, #1501]
Benzenethiol C_6H_5SH 108-98-5 DC0525000 2337 131	Mercaptobenzene, Phenylmercaptan, Thiophenol 1 ppm = 4.51 mg/m³	NIOSH C 0.1 ppm (0.5 mg/m³) [15-min] OSHA† none	N.D.	Water-white liquid with an offensive, garlic-like odor [Note: A solid below 5°F.]	MW 110.2 BP 338°F Sol(77°F) 0.06% FLP 132°F IP 8.33 eV Sp Gr 1.08 Class II Combustible Liquid	VP(65°F) 1 mm FRZ 5°F UEL ? LEL ?	Strong acids & bases, calcium hypochlorite, alkali metals [Note: Oxidizes on exposure to air.]	None available
Benzidine $NH_2C_6H_4C_6H_4NH_2$ 92-87-5 DC9625000 1886 153	Benzidine-based dyes; 4,4'-Bianline; 4,4'-Biphenyldiamine; 1,1'-Biphenyl-4,4'-diamine; 4,4'-Diaminobiphenyl; p-Diaminodiphenyl [Note: Benzidine has been used as a basis for many dyes.]	NIOSH Ca See Appendix A See Appendix C OSHA [1910 1010] See Appendix B See Appendix C	Ca [N.D.]	Grayish-yellow, reddish-gray, or white crystalline powder. [Note: Darkens on exposure to air and light.]	MW 184.3 BP 752°F Sol(54°F) 0.04% FLP ? IP ? Sp Gr 1.25 Combustible Solid, but difficult to burn	VP Low MLT 239°F UEL ? LEL ?	Red fuming nitric acid	Filter; Reagent; HPLC/UVD; IV [#5509]
Benzoyl peroxide $(C_6H_5CO)_2O_2$ 94-36-0 DM8575000 2085/2087 146 2088/2090 148 2089 145	Benzoperoxide, Dibenzoyl peroxide	NIOSH/OSHA 5 mg/m³	1500 mg/m³	Colorless to white crystals or a granular powder with a faint, benzaldehyde-like odor	MW 242.2 BP Decomposes explosively Sol <1% FLP 176°F IP ? Sp Gr 1.33 Combustible Solid (easily ignited and burns very rapidly)	VP <1 mm MLT 217°F UEL ? LEL ?	Combustible substances (wood, paper, etc.), acids, alkalis, alcohols amines ethers [Note: Containers may explode when heated. Extremely explosion-sensitive to shock, heat, and friction.]	Filter, Diethyl ether; HPLC/UVD; IV [#5009]

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards				Target organs (See Table 6)
		Route	Symptoms (See Table 6)	First aid (See Table 6)		
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet (flamm) Change: N.R. Provide: Eyewash, Quick drench [Benzene] ✱	NIOSH § SCBAF PD,PP/SAF,PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, nose, resp sys, gidd, head, nau, staggered gait, fig, anor, lass, derm, bone marrow depres, [carc]	Eye Skin Breath Swallow	Irr immed Soap wash immed Resp support Medical attention immed	Eyes, skin, blood, CNS, bone marrow [leukemia]
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. Provide: Eyewash, Quick drench [Benzenethiol]	NIOSH 1 ppm: CCROV/SA 2.5 ppm: SA:CF/PAPROV 5 ppm: CCREOV/GMFOV/PAPRTOV/SCBAF/SAF § SCBAF PD,PP/SAF,PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, resp sys, derm, cyan, cough, wheez, dysp, pulm edema, pneumo, head, dizz, CNS depres, nau, vomt, kidney, liver, spleen damage	Eye Skin Breath Swallow	Irr immed Soap wash immed Resp support Medical attention immed	Eyes, skin, CNS, kidneys, spleen
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam/Daily Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench [Benzidine]	NIOSH ✱ SCBAF PD,PP/SAF,PD,PP ASCBA Escape: H/EF/SCBAE	Inh Abs Ing Con	Hema, secondary anemia from hemolysis, acute cystitis, acute liver disorders, derm, painful, irreg urination: [carc]	Eye Skin Breath Swallow	Irr immed Soap wash immed Resp support Medical attention immed	Bladder, kidneys, blood [liver, ki bladd
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily [Benzoyl peroxide]	NIOSH/OSHA 50 mg/m³: DM/XSQ*/SA* 125 mg/m³: SA:CF*/PAPRDM* 250 mg/m³: H/EF/PAPRTH/E*/SCBAF/SAF 1500 mg/m³: SAF,PD,PP § SCBAF,PD,PP/SAF,PD,PP ASCBA Escape: H/EF/SCBAE	Inh Ing Con	Irrit eyes, skin, muc memb, sens derm	Eye Skin Breath Swallow	Irr immed Soap wash promptly Resp support Medical attention immed	Eyes

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties		Incompatibilities and reactivities	Measurement method (See Table 1)
					MW, BP, SOL FLP, IP, Sp, Gr, flammability	VP, FRZ UEL, LEL		
Vinyl bromide CH_2=CHBr 593-60-2 KU6400000 1085 116P	Bromoethene, Bromoethylene 1 ppm = 4.36 mg/m³	NIOSH Ca See Appendix A OSHA† none	Ca [N.D.]	Colorless gas or liquid (below 60°F) with a pleasant odor. [Note: Shipped as a liquefied compressed gas with 0.1% phenol added to prevent polymerization.]	MW: 107.0 BP: 60°F Sol: Insoluble FI P: NA (Gas) IP: 9.80 eV RGasD: 3.79 Sp.Gr: 1.49 [Liquid at 60°F] Flammable Gas Class IA Flammable Liquid	VP: 1.4 atm FRZ: -219°F UEL: 16% LEL: 9%	Strong oxidizers [Note: May polymerize in sunlight.]	Char; Ethanol; GC/FID; IV [#1009]
Vinyl chloride CH_2=CHCl 75-01-4 KU9625000 1086 116P	Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM) 1 ppm = 2.56 mg/m³	NIOSH Ca See Appendix A [Use 1910 1017] OSHA [1910 1017] 1 ppm C 5 ppm [15-min]	Ca [N D]	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations [Note: Shipped as a liquefied compressed gas]	MW: 62 5 BP 7°F Sol(77°F) 0 1% FI P: NA (Gas) IP 9 99 eV RGasD 2 21 Flammable Gas	VP: 3 3 atm FRZ: -256°F UEL: 33 0% LEL 3 6%	Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol Attacks iron & steel in presence of moisture]	Char(2); CS_2 GC/FID, IV [#1007]
Vinyl cyclohexene dioxide $C_8H_{12}O_2$ 106-87-6 RN9640000 1907 116P	1-Epoxyethyl-3,4-epoxycyclohexane; 4-Vinylcyclohexene dioxide; 4-Vinyl-1-cyclohexene dioxide 1 ppm = 5.73 mg/m³	NIOSH Ca Appendix A; 10 ppm (60 mg/m³) [skin] OSHA† none	Ca [N.D.]	Colorless liquid.	MW: 140.2 BP: 441°F Sol: High FI.P(tcc): 230°F IP: ? Sp Gr: 1.10 Class IIIB Combustible Liquid	VP: 0.1 mm FRZ: -164°F UEL: ? LEL: ?	Alcohols, amines, water [Note: Slowly hydrolyzes in water.]	None available
Vinyl fluoride CH_2=CHF 75-02-5 YZ7351000 1860 116P	Fluoroethene, Fluoroethylene, Monofluoroethylene, Vinyl fluoride monomer 1 ppm = 1 89 mg/m³	NIOSH 1 ppm C 5 ppm [use 1910 1017] OSHA none	N.D	Colorless gas with a faint, ethereal odor [Note: Shipped as a liquefied compressed gas]	MW 46.1 BP -99°F Sol Insoluble FI P NA (Gas) IP 10.37 eV RGasD 1 60 Flammable Gas	VP 25 2 atm FRZ: -257°F UEL 21 7% LEL 2 6%	None reported [Note Inhibited with 0 2% terpenes to prevent polymerization]	None available

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards			
		Route	Symptoms (See Table 5)	First aid (See Table 6)	
Skin: Prevent skin contact (liq) Eyes: Prevent eye contact (liq) Wash skin: When contam (liq) Remove: When wet (flamm) Change: N R. [Vinyl bromide]	NIOSH Ca SCBAF PD,PP/SAF PD,PP ASCBA Escape GMFOV/SCBAE	Inh Ing (liq) Con (liq)	Irrit eyes, skin, dizz, conf, incoo, narco, nau, vomit; liq: frostbite; [carc]	Eye: Skin: Breath: Swallow	Irr immed (liq) Water flush immed (liq) Resp support Medical attention immed (liq)
Skin: Frostbite Eyes Frostbite Wash skin N R Remove When wet (flamm) Change N R Provide Frostbite [Vinyl chloride]	NIOSH Ca SCBAF PD,PP/SAF,PD,PP ASCBA Escape GMFS/SCBAE	Inh Con (liq)	Weak, abdom pain, GI bleeding, enlarged liver, pallor or cyan of extremities, liq frostbite [carc]	Eye Skin Breath	Frostbite Frostbite Resp support
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. Provide: Eyewash, Quick drench [Vinyl cyclohexene dioxide]	NIOSH Ca SCBAF PD,PP/SAF PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	In animals: irrit eyes, skin, resp sys, testicular atrophy; lacrimn; retro thymus; skin sens; [carc]	Eye Skin Breath Swallow	Irr immed Water wash immed Resp support Medical attention immed
Skin: Frostbite Eyes Frostbite Wash skin N R Remove When wet (flamm) Change N R Provide Frostbite [Vinyl fluoride]	NIOSH 10 ppm CCROV/SA 25 ppm SA:CF/PAPROV 50 ppm CCRFOV/GMFOV/PAPRTOV/ SCBAF/SAF 200 ppm SAF PD,PP § SCBAE PD PP/SAF PD PP ASCBA Escape GMFOV/SCBAE	Inh Con (liq)	Head, dizz, conf, incoo, narco, nau, vomit; liq frostbite	Eye Skin Breath	*Frostbite* Frostbite Resp support

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr., flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Phenol C_6H_5OH 108-95-2 SJ3325000 1671 153 (solid) 2312 153 (molten) 2821 153 (solution)	Carbolic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide 1 ppm = 3.85 mg/m³	NIOSH 5 ppm (19 mg/m³) C 15.6 ppm (60 mg/m³) [15-min] [skin] OSHA 5 ppm (19 mg/m³) [skin]	250 ppm	Colorless to light-pink, crystalline solid with a sweet, acrid odor. [Note: Phenol liquefies by mixing with about 8% water.]	MW: 94.1 BP: 359°F Sol(77°F): 9% Fl.P: 175°F IP: 8.50 eV Sp Gr: 1.06 Combustible Solid	VP: 0.4 mm MLT: 109°F UEL: 8.6% LEL: 1.8%	Strong oxidizers, calcium hypochlorite, aluminum chloride, acids	XAD-7, Methanol; GC/FID; IV [#2546, [illegible]] Cresols and Phenol [illegible]
Phenothiazine $S(C_6H_4)_2NH$ 92-84-2 SN5075000	Dibenzothiazine, Fenothiazine, Thiodiphenylamine	NIOSH 5 mg/m³ [skin] OSHA† none	N.D.	Grayish-green to greenish-yellow solid [insecticide]	MW: 199.3 BP: 700°F Sol: Insoluble Fl.P: ? IP: ? Sp Gr: ? Combustible Solid, but not a high fire risk	VP: 0 mm (approx) MLT: 365°F UEL: ? LEL: ?	None reported	None available
p-Phenylene diamine $C_6H_4(NH_2)_2$ 106-50-3 SS8050000 1673 153	4-Aminoaniline; 1,4-Benzenediamine; p-Diaminobenzene; 1,4-Diaminobenzene; 1,4-Phenylene diamine	NIOSH/OSHA 0.1 mg/m³ [skin]	25 mg/m³	White to slightly red, crystalline solid.	MW: 108.2 BP: 513°F Sol(75°F): 4% Fl.P: 312°F IP: 6.89 eV Sp Gr: ? Combustible Solid	VP: <1 mm MLT: 295°F UEL: ? LEL: ?	Strong oxidizers	Filter*; EDTA; HPLC/UVD; OSHA [#87]
Phenyl ether (vapor) $C_6H_5OC_6H_5$ 101-84-8 KN8970000	Diphenyl ether, Diphenyl oxide, Phenoxybenzene, Phenyl oxide 1 ppm = 6.96 mg/m³	NIOSH/OSHA 1 ppm (7 mg/m³)	100 ppm	Colorless, crystalline solid or liquid (above 82°F) with a geranium-like odor	MW: 170.2 BP: 498°F Sol: Insoluble Fl.P: 239°F IP: 8.09 eV Sp Gr: 1.08 Combustible Solid Class IIIB Combustible Liquid	VP(77°F): 0.02 mm MLT: 82°F UEL: 6.0% LEL: 0.7%	Strong oxidizers	Char; CS_2; GC/FID; IV [#1617]

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Health hazards: Symptoms (See Table 5)	Health hazards: First aid (See Table 6)		Ta... (S...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench [Phenol]	NIOSH/OSHA 50 ppm: CCROVDM/SA 125 ppm: SA CF/PAPROVDM 250 ppm: CCRFOVHIE/GMFOVHIE/PAPRTOVHIE/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHIE/SCBAE	Inh Abs Ing Con	Irrit eyes, nose, throat, anor, low-wgt, weak, musc ache, pain, dark urine, cyan, liver, kidney damage, skin burns, derm, ochronosis, tremor, convuls, twitch	Eye Skin Breath Swallow	Irr immed Soap wash immed Resp support Medical attention immed	Eye... liver...
Skin: Prevent skin contact Eyes: N.R. Wash skin: When contam/Daily Remove: When wet or contam Change: Daily [Phenothiazine]	TBAL	Inh Abs Ing Con	Itching, irrit, reddening skin, hepatitis, hemolytic anemia, abdom cramps, tacar, kidney damage, skin photo sens	Eye Skin Breath Swallow	Irr immed Soap wash prompt Resp support Medical attention immed	Skin kidn...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam/Daily Remove: When wet or contam Change: Daily [p-Phenylene diamine]	NIOSH/OSHA 2.5 mg/m³: SA CF£ 5 mg/m³: SCBAF/SAF 25 mg/m³: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFSHIE/SCBAE	Inh Abs Ing Con	Irrit pharynx, larynx; bronchial asthma, sens derm	Eye Skin Breath Swallow	Irr immed Soap wash prompt Resp support Medical attention immed	Resp...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. [Phenyl ether (vapor)]	NIOSH/OSHA 25 ppm: SA CF£/PAPROVDM£ 50 ppm: CCRFOVHIE/GMFOVHIE/SCBAF/SAF 100 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHIE/SCBAE	Inh Con	Irrit eyes, nose, skin, nau	Eye Skin Breath	Irr immed Soap wash prompt Resp support	Eyes...

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties	Incompatibilities and reactivities	Measurement method (See Table 1)
Crag® herbicide $C_6H_3Cl_2OCH_2CH_2OSO_3Na$ 136-78-7 KK4900000	Crag® herbicide No. 1; 2-(2,4-Dichlorophenoxy)-ethyl sodium sulfate; Sesone	NIOSH 10 mg/m³ (total) 5 mg/m³ (resp) OSHA 15 mg/m³ (total) 5 mg/m³ (resp)	500 mg/m³	Colorless to white crystalline, odorless solid. [herbicide]	MW: 309.1 BP: Decomposes Sol(77°F): 28% FI.P: NA *IP*: ? Sp.Gr: 1.70 Noncombustible Solid	VP: 0.1 mm MLT: 473°F (Decomposes) UEL: NA *LEL*: NA	Strong oxidizers, acids	Filter; Water; Vis; 8(5) [#3506]
o-Cresol $CH_3C_6H_4OH$ 95-48-7 GO8300000 2076 153	ortho-Cresol; 2-Cresol; o-Cresylic acid; 1-Hydroxy-2-methylbenzene; 2-Hydroxytoluene; 2-Methyl phenol 1 ppm = 4.43 mg/m³	NIOSH 2.3 ppm (10 mg/m³) OSHA 5 ppm (22 mg/m³) [skin]	250 ppm	White crystals with a sweet, tarry odor [Note: A liquid above 88°F.]	MW: 108.2 BP: 376°F Sol: 2% FI.P: 178°F IP: 8.93 eV Sp.Gr: 1.05 Combustible Solid *Class IIIA Combustible Liquid*	VP(77°F): 0.29 mm MLT: 88°F UEL: ? LEL(300°F): 1.4%	Strong oxidizers, acids	XAD-7; Methanol, GC/FID, IV [#2546, Cresols and Phenol]
m-Cresol $CH_3C_6H_4OH$ 108-39-4 GO8125000 2076 153	meta-Cresol; 3-Cresol; m-Cresylic acid; 1-Hydroxy-3-methylbenzene; 3-Hydroxytoluene; 3-Methyl phenol 1 ppm = 4.43 mg/m³	NIOSH 2.3 ppm (10 mg/m³) OSHA 5 ppm (22 mg/m³) [skin]	250 ppm	Colorless to yellowish liquid with a sweet, tarry odor. [Note: A solid below 54°F.]	MW: 108.2 BP: 397°F Sol: 2% FI.P: 187°F IP: 8.86 eV Sp.Gr: 1.03 *Class IIIA Combustible Liquid*	VP(77°F): 0.14 mm FRZ: 54°F UEL: ? LEL(302°F): 1.1%	Strong oxidizers, acids	XAD-7, Methanol, GC/FID, IV [#2546, Cresols and Phenol]
p-Cresol $CH_3C_6H_4OH$ 106-44-5 GO6475000 2076 153	para-Cresol; 4-Cresol; p-Cresylic acid; 1-Hydroxy-4-methylbenzene; 4-Hydroxytoluene; 4-Methyl phenol 1 ppm = 4.43 mg/m³	NIOSH 2.3 ppm (10 mg/m³) OSHA 5 ppm (22 mg/m³) [skin]	250 ppm	Crystalline solid with a sweet, tarry odor [Note: A liquid above 95°F.]	MW: 108.2 BP: 396°F Sol: 2% FI.P: 187°F IP: 8.97 eV Sp.Gr: 1.04 Combustible Solid *Class IIIA Combustible Liquid*	VP(77°F): 0.11 mm MLT: 95°F UEL: ? LEL(302°F): 1.1%	Strong oxidizers, acids	XAD-7, Methanol, GC/FID, IV [#2546, Cresols and Phenol]

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Health hazards: Symptoms (See Table 5)	Health hazards: First aid (See Table 6)	Health hazards: Target (See Ta
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily	NIOSH 50 mg/m³: DM 100 mg/m³: DM/XBO/SA 250 mg/m³: SA:CF/APRDM 500 mg/m³: HiEF/PAPRTHiE*/SAT:CF*/ SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: HiEF/SCBAE	Inh Ing Con	Irrit eyes, skin; liver, kidney damage; in animals: CNS effects, convuls	Eye: Skin: Breath: Swallow:	Eyes, sk liver, kid
[Crag® herbicide]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench	NIOSH 23 ppm: CCROVDM/SA 57.5 ppm: SA:CF/APROVDM 115 ppm: CCRFOVHiE/GMFOVHiE/ PAPRTHiE*/SAT:CF*/ SCBAF/SAF 250 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHiE/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, muc memb; CNS effects: conf, depres, resp fail, dysp; irreg rapid resp, weak pulse; eye, skin burns; derm, lung, liver, kidney, pancreas damage	Eye: Skin: Breath: Swallow:	Irr immed Soap wash immed Resp support Medical attention immed
[o-Cresol]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench	NIOSH 23 ppm: CCROVDM/SA 57.5 ppm: SA:CF/APROVDM 115 ppm: CCRFOVHiE/GMFOVHiE/ PAPRTHiE*/SAT:CF*/ SCBAF/SAF 250 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHiE/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, resp; memb; CNS effects: conf, depres, resp fail, dysp; irreg rapid resp, weak pulse; eye, skin burns; derm, lung, liver, kidney, pancreas damage	Eye: Skin: Breath: Swallow:	Irr immed Soap wash immed Resp support Medical attention immed
[m-Cresol]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench	NIOSH 23 ppm: CCROVDM/SA 57.5 ppm: SA:CF/APROVDM 115 ppm: CCRFOVHiE/GMFOVHiE/ PAPRTHiE*/SAT:CF*/ SCBAF/SAF 250 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHiE/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, muc memb; CNS effects: conf, depres, resp fail, dysp; irreg rapid resp, weak pulse; eye, skin burns; derm, lung, liver, kidney, pancreas damage	Eye: Skin: Breath: Swallow:	Irr immed Soap wash immed Resp support Medical attention immed
[p-Cresol]					

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Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr, flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Morpholine C_4H_9ON 110-91-8 QD6475000 1760 154 (aqueous) 2054 132	Diethylene imidoxide; Diethylene oximide; Tetrahydro-1,4-oxazine; Tetrahydro-p-oxazine 1 ppm = 3.58 mg/m³	NIOSH 20 ppm (70 mg/m³) ST 30 ppm (105 mg/m³) [skin] OSHA† 20 ppm (70 mg/m³) [skin]	1400 ppm [10%LEL]	Colorless liquid with a weak, ammonia- or fish-like odor. [Note: A solid below 23°F.]	MW: 87.1 BP: 264°F Sol: Miscible Fl.P(oc): 98°F IP: 8.88 eV Sp.Gr: 1.007 Class IC Flammable Liquid	VP: 6 mm FRZ: 23°F UEL: 11.2% LEL: 1.4%	Strong acids, strong oxidizers, metals, nitro compounds [Note: Corrosive to metals.]	Si gel, H_2SO_4/NaOH; GC/FID; II(3) [#S150]
Naphtha (coal tar) 8030-30-6 DE3030000 1256 128 (solvent) 2553 128	Crude solvent coal tar naphtha, High solvent naphtha, Naphtha 1 ppm = 4.50 mg/m³ (approx)	NIOSH/OSHA 100 ppm (400 mg/m³)	1000 ppm [10%LEL]	Reddish-brown, mobile liquid with an aromatic odor	MW: 110 (approx) BP: 320-428°F Sol: Insoluble Fl.P: 100-109°F IP: ? Sp.Gr: 0.89-0.97 Class II Combustible Liquid	VP: <5 mm FRZ: ? UEL: ? LEL: 1%	Strong oxidizers	Char; CS₂; GC/FID; IV [#1550]
✱ Naphthalene $C_{10}H_8$ 91-20-3 QJ0525000 1334 133 (crude or refined) 2304 133 (molten)	Naphthalin, Tar camphor, White tar 1 ppm = 5.24 mg/m³	NIOSH 10 ppm (50 mg/m³) ST 15 ppm (75 mg/m³) OSHA† 10 ppm (50 mg/m³)	250 ppm	Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.]	MW: 128.2 BP: 424°F Sol: 0.003% Fl.P: 174°F IP: 8.12 eV Sp.Gr: 1.15 Combustible Solid, but will take some effort to ignite.	VP: 0.08 mm MLT: 176°F UEL: 5.9% LEL: 0.9%	Strong oxidizers, chromic anhydride	Char; CS₂; GC/FID; IV [#1501, Aromatic Hydrocarbons]
Naphthalene diisocyanate $C_{10}H_6(NCO)_2$ 3173-72-6 NQ9600000	1,5-Diisocyanatonaphthalene, 1,5-Naphthalene diisocyanate; 1,5-Naphthalene ester of isocyanic acid, NDI 1 ppm = 8.60 mg/m³	NIOSH 0.040 mg/m³ (0.005 ppm) C 0.170 mg/m³ (0.020 ppm) [10-min] OSHA none	N.D.	White to light-yellow, crystalline flakes	MW: 210.2 BP: 505°F Sol: ? Fl.P(oc): 311°F IP: ? Sp.Gr: ? Combustible Solid	VP(75°F): 0.003 mm MLT: 261°F UEL: ? LEL: ?	None reported	None available

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Health hazards: Symptoms (See Table 5)	Health hazards: First aid (See Table 6)	Health hazards: Ta[rget organs] (S[ee Table 5])
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet (flamm) Change: N.R. Provide: Eyewash (>15%), Quick drench (>25%) [Morpholine]	NIOSH/OSHA 500 ppm: SA CF£/PAPROV£ 1000 ppm: CCRFOV/GMFOV/PAPRTOV£/SCBAF/SAF 1400 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, nose, resp sys; vis dist; cough; in animals: liver, kidney damage	Eye: Irr immed Skin: Water flush immed Breath: Resp support Swallow: Medical attention immed	Eye[s] ...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. [Naphtha (coal tar)]	NIOSH/OSHA 1000 ppm: SA CF£/CCRFOV/GMFOV/PAPROV£/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOV/SCBAE	Inh Ing Con	Irrit eyes, skin, nose, lt-head, drow; derm; in animals: liver, kidney damage	Eye: Irr immed Skin: Soap wash prompt Breath: Resp support Swallow: Medical attention immed	Eye[s], CN[S] ...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily [Naphthalene] ✱	NIOSH/OSHA 100 ppm: CCROVDM*/SA* 250 ppm: SA:CF*/CCRFOVHIE/PAPROVDM*/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOVHIE/SCBAE	Inh Abs Ing Con	Irrit eyes, head, conf, excitement, mal, nau, vomit, abdom pain; irrit bladder; profuse sweat; jaun; hema, hemog, renal shutdown; derm, optical neuritis, corn damage	Eye: Irr immed Skin: Molten flush immed/sol-liq soap wash prompt Breath: Resp support Swallow: Medical attention immed	Ey[es], ...
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily [Naphthalene diisocyanate]	NIOSH 0.05 ppm: SA* 0.125 ppm: SA:CF* 0.25 ppm: SCBAF/SAF 1 ppm: SAF:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: GMFOV/SCBAE	Inh Ing Con	Irrit eyes, nose, throat, resp sens, cough, pulm secretions, chest pain, dysp, asthma	Eye: Irr immed Skin: Soap wash immed Breath: Resp support Swallow: Medical attention immed	E[yes] ...

Chemical name, Synonyms

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, FLP, IP, Sp, Gr, flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Diethyl phthalate ✱ $C_6H_4(COOC_2H_5)_2$ 84-66-2 TI1050000	DEP; Diethyl ester of phthalic acid; Ethyl phthalate	NIOSH 5 mg/m³ OSHA† none	N.D	Colorless to water-white, oily liquid with a very slight, aromatic odor. [pesticide]	MW 222.3 BP 563°F Sol(77°F): 0.1% Fl P(oc): 322°F IP ?	VP(77°F): 0.002 mm FRZ: -41°F UEL: ? LEL(368°F): 0.7%	Strong oxidizers, strong acids, nitric acid, permanganates, water	OVS-Tenax; Toluene; GC/FID; OSHA [#104]
					Sp Gr 1.12 Class IIIB Combustible Liquid; however, ignition is difficult.			
Difluorodibromomethane CBr_2F_2 75-61-6 PA7525000	Dibromodifluoromethane, Freon® 12B2, Halon® 1202	NIOSH/OSHA 100 ppm (860 mg/m³)	2000 ppm	Colorless, heavy liquid or gas (above 76°F) with a characteristic odor	MW 209.8 BP 76°F Sol. Insoluble Fl P NA IP 11.07 eV	VP: 820 mm FRZ: -231°F UEL: NA LEL: NA	Chemically-active metals such as sodium, potassium, calcium, powdered aluminum, zinc & magnesium	Char(2); 2-Propanol; GC/FID, IV [#1012]
					Sp Gr(59°F): 2.29 Noncombustible Liquid Nonflammable Gas			
1941 159	1 ppm = 8.58 mg/m³							
Diglycidyl ether $C_6H_{10}O_3$ 2238-07-5 KN2380000	DGE; Diglycol ether dioxide; Di(2,3-epoxypropyl) ether; 2-Epoxypropyl ether; bis(2,3-Epoxypropyl) ether	NIOSH Ca See Appendix A 0.1 ppm (0.6 mg/m³) OSHA† C 0.5 ppm (2.8 mg/m³)	Ca [10 ppm]	Colorless liquid with a strong, irritating odor.	MW 130.2 BP 500°F Sol. ? Fl P 147°F IP: ?	VP(77°F): 0.09 mm FRZ: ? UEL: ? LEL: ?	Strong oxidizers	None available
	1 ppm = 5.33 mg/m³				Sp Gr 1.12 Class IIIA Combustible Liquid			
Diisobutyl ketone $[(CH_3)_2CHCH_2]_2CO$ 108-83-8 MJ5775000	DIBK; sym-Diisopropyl acetone, 2,6-Dimethyl-4-heptanone, isovalerone, Valerone	NIOSH 25 ppm (150 mg/m³) OSHA† 50 ppm (290 mg/m³)	500 ppm	Colorless liquid with a mild, sweet odor	MW 142.3 BP 334°F Sol 0.05% Fl P 120°F IP 9.04 eV	VP 2 mm FRZ -43°F UEL(200°F) 7% LEL(200°F) 0.8%	Strong oxidizers	Char; CS; GC/FID, IV [#1300, Ketones I]
					Sp Gr 0.81 Class II Combustible Liquid			
1157 127	1 ppm = 5.82 mg/m³							

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (RMUC) (See Table 4)	Health hazards: Route	Symptoms (See Table 5)	First aid (See Table 6)	Target (See
Skin: N.R. Eyes: N.R. Wash skin: N.R. Remove: N.R. Change: N.R.	TBAL	Inh Ing Con	Irrit eyes, skin, nose, throat, head, dizz, nau; lac; possible polyneur, vestibular dysfunc; pain, numb, weak, spasms in arms & legs; In animals: repro effects	Eye: Irr immed Skin: Wash regularly Breath: Resp support Swallow: Medical attention immed	Eyes, s CNS, P
[Diethyl phthalate] ✱					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: N.R. Remove: When wet or contam Change: N.R.	NIOSH/OSHA 1000 ppm: SA 2000 ppm: SA:CF/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Ing Con	In animals: irrit resp sys, CNS symptoms, liver damage	Eye: Irr immed Skin: Water flush immed Breath: Resp support Swallow: Medical attention immed	Resp s liver
[Difluorodibromomethane]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam/Daily Remove: When wet or contam Change: Daily Provide: Eyewash, Quick drench	NIOSH #: SCBAF:PD,PP/SAF:PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Irrit eyes, skin, resp sys, skin burns; In animals: flamate eye, lung, liver, kidney damage; repro effects, [carc]	Eye: Irr immed Skin: Soap wash immed Breath: Resp support Swallow: Medical attention immed	Eyes repro [In ani skin
[Diglycidyl ether]					
Skin: Prevent skin contact Eyes: N.R. Wash skin: When contam Remove: When wet or contam Change: N.R.	NIOSH 500 ppm: SA:CF*/PAPROV*/CCRFOV/GMFOV/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP ASCBA Escape: GMFOV/SCBAE	Inh Ing Con	Irrit eyes, skin, nose, throat, head, dizz, derm, liver, kidney damage	Eye: Irr immed Skin: Soap wash prompt Breath: Resp support Swallow: Medical attention immed	Eyes CNS
[Diisobutyl ketone]					

ATTACHMENT B

MATERIAL SAFETY DATA SHEETS

(MSDSs)

SEE PRP HASP AS NECESSARY

ATTACHMENT C

SAFETY PROCEDURES/FIELD OPERATING PROCEDURES

(FLD OPs)

SEE WESTON FIELD SAFETY OFFICER MANUAL

3.7 MANAGER'S FIELD SITE HEATLH AND SAFETY AUDIT FORM

Return to top

PM name: _____ Date: _____
Client name: _____ W.O. No.: _____
Site location: _____ Site phone no.: _____
Inspection conducted by:
__ PM in person __ PM via phone (Contact Name: _____)
__ PM's designee (Designee's Name: _____)

1. Is the HASP available at the site? __yes __no Signed by all personnel? __yes __no
(Have the cover page and site worker sign-off page faxed and attached to this form.)

2. What tasks are active? _____.

3. What special H&S considerations are necessary? (e.g., confined spaces, fall protection, construction safety, excavation evaluations, radiation, etc.) _____
_____.

4A.List the name of the SHSC/FSO on Line (a) and any other employees working at the site on lines (b) through (i). Verify and check (✓) if field certifications are current:

Name	RFW or Sub?	Training	Medical	Fit Test
a.				
(For above, circle: SHSC or FSO)				
b.				
c.				
d.				
e.				
f.				
g.				
h.				
i.				

4B.For large projects, is documentation on-site for employee certifications? __yes __no __NA

5. Is emergency contact information available on-site? __yes __no
(Have a copy faxed from the site and attached to this report.)

6. Describe the ambient temperatures during recent work shifts: _____.

PM Signature/Date: _____ Page 1 of 2

7. Was the level of PPE used for each task today as required by the HASP? __yes __no

8A. What contaminant monitoring is conducted? _____.

8B. How are results documented? ___Logbook ___Forms ___other (describe): _____.
(Have the most recent results and calibration information faxed and attached to this form.)

9. What other monitoring is done? (e.g., heat stress, cold, noise, etc.) _____.

10. How are work zones marked and/or designated? _____.

11. Are personnel and equipment decon performed as required by the HASP? __yes __no

12. Are first aid and CPR services provided as required by the HASP? __yes __no

13. When were first aid kits, BBP kits, and fire extinguishers last inspected? _____.
(Have documentation faxed and attached to this form.)

14. Was site-specific hazard communication completed and properly documented? __yes ___no
(Have checklist in HASP Attachment D faxed and attached to this form.)

15. When was the last safety briefing conducted? _____. List topic(s) discussed:
_____.
(Have minutes/sign-up sheet faxed and attached to this form.)

16. Explain any negative findings below: _____

PM Signature/Date: _____ Page 2 of 2

Revised 5/1998

ATTACHMENT D

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

SEE PRP HASP AS NECESSARY

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

Location-Specific Hazard Communication Program/Checklist

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.

While responsibility for activities within this document reference the WESTON Safety Officer (SO), it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of OSHA, NIOSH, or any affected employer/employee on a multi-employer site.

☒ Site or other location name/address: H.O.D. Landfill, Antioch, IL

☒ Site/Project/Location Manager: Om Patel

☒ Site/Location Safety Officer: Doug Ogilvie (or alternate)

☒ List of chemicals compiled; format: ☐ HASP ☒ Other: See PRP HASP

☒ Location of MSDS files: See PRP HASP

☐ Training conducted by: Name: _____ Date: _____

☒ Indicate format of training documentation: ☒ Field Log: ☐ Other: _____

☐ Client briefing conducted regarding hazard communication: _____

☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies:

_____

☐ Other employer(s) notified of chemicals, labeling, and MSDS information: _____

☒ Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? ☒ Yes ☐ No

List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or placed in a centrally identified location with the MSDSs. Further information on each chemical may be obtained by reviewing the appropriate MSDS. The list will be arranged to enable cross-reference with the MSDS file and the label on the container. The SO or Location Manager is responsible for ensuring the chemical listing remains up-to-date.

Container Labeling

The WESTON SO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.

The SO is responsible for ensuring that labels are placed where required and for comparing MSDSs and other information with label information to ensure correctness.

Material Safety Data Sheets (MSDSs)

The SO is responsible for establishing and monitoring WESTON's MSDS program for the location. The SO will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an MSDS is not received at the time of initial shipment, the SO will call the manufacturer and have an MSDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, MSDSs for all hazardous chemicals in use will be kept in the MSDS folder at a location known to all site workers. MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, immediately contact the WESTON SO or the designated alternate. When a revised MSDS is received, the SO will immediately replace the old MSDS.

Employee Training and Information

The SO is responsible for the WESTON site-specific personnel training program. The SO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below.

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the MSDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review MSDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, nonroutine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Nonroutine Tasks

When employees are required to perform hazardous nonroutine tasks, the affected employee(s) will be given information by the SO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Chemicals in Unlabeled Pipes

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the SO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

Multi-Employer Work Sites

It is the responsibility of the SO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of the SO and the Site Manager to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as requested. MSDSs will be available for viewing, as necessary.

ATTACHMENT E

PRP CONTRACTOR'S HASP (RMT, INC.)

RMT
Integrated Environmental Solutions

744 Heartland Trail 53717-1934
P.O. Box 8923 53708-8923
Madison, WI
Telephone: 608-831-4444
Fax: 608-831-3334

HEALTH AND SAFETY PLAN FOR THE REMEDIAL ACTION

H.O.D. LANDFILL ANTIOCH, ILLINOIS

PREPARED BY
RMT, INC.

August 2000

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Preface

This Health and Safety Plan (HSP) is part of the Remedial Design/Remedial Action (RD/RA) documentation for the H.O.D. Landfill Site in Antioch, Illinois, developed in response to the Administrative Order for Remedial Design and Remedial Action issued by the United States Environmental Protection Agency (USEPA). This HSP addresses the RA (construction and monitoring) as required in Section III of the Statement of Work (SOW) attached to the Administrative Order. It has been prepared for use by RMT, Inc., employees to meet the requirements of Occupational Health and Safety Administration Standards under 29 CFR 1910 and 1926, and related guidance. Individual contractors at the site will be responsible for preparing their own Health and Safety Plan to meet local, state, and federal requirements.

Section 1
Introduction

1.1 Purpose

This site-specific RMT Health and Safety Plan (HSP) has been developed to provide guidelines and procedures intended to protect the health and safety of RMT personnel performing site work associated with the RA. These site activities are generally defined by the RD/RA Workplan and are described in detail in the Remedial Design Report. The HSP will be reviewed with all RMT field personnel before RA site work begins. Each subcontractor will be required to develop and implement their own health and safety plan applicable to their work on-site in accordance with local, state, and federal requirements; Waste Management of Illinois, Inc. (WMII), contractor requirements; and this HSP.

Specific questions regarding the HSP should be addressed to the RMT Health and Safety Coordinator (HSC). A copy of the HSP will be available for review by site personnel and authorized visitors upon the request of the site RMT Health and Safety Representative (HSR). Employees of each consulting and/or contracted company will be working in accordance with their own independent HSPs, providing that the minimum requirements of this HSP are fulfilled.

The HSP will be reviewed periodically by the site Health and Safety Representative (HSR) and updated as necessary. The plan will also be updated to reflect new or additional site information when this information becomes available.

1.2 Scope

The HSP is aimed specifically at protecting RMT site workers from reasonably foreseeable health and safety hazards arising from the conditions found at the H.O.D. Landfill site as a result of undertaking the RA. The procedures presented have been identified based on the analytical results from soil, sediment, surface water, and groundwater samples collected during previous site work. This HSP meets the requirements of the Statement of Work.

The HSP has been developed in conformance with the following requirements and guidance:

- Occupational Safety and Health Administration (OSHA) Standards, 29 CFR 1910 and 1926, including 29 CFR 1910.120
- NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985

- USEPA, Standard Operating Safety Guides, June 1992

The HSP has been developed from technical information available as of March 2000 and is subject to revision as new data and information about the site and site activities become available. The plan shall cover employees performing site fieldwork associated with the RA.

The work tasks to be completed for the RA phase are as follows:

- Installation of site erosion controls
- Grading of site
- Relocation of waste
- Installation and/or rehabilitation of extraction wells
- Placement of landfill gas (LFG) and leachate piping
- Construction of a blower/flare station
- Construction of a leachate tank and loadout facility
- Construction of access roads
- Placement of perimeter fence and access gates
- Placement of topsoil, seed, and mulch
- Monitoring and sampling of groundwater, leachate, landfill gas, and surface water
- Installation of landfill gas probes

1.3 Applicability

The HSP applies to RMT personnel who participate in RA field activities. It contains the minimum requirements necessary to protect on-site personnel from physical, chemical, and other hazards particular to this site that have been identified as of the date of this HSP. More stringent practices than those outlined in this plan may be used, but this plan specifies the minimum practices to which personnel must adhere.

1.4 Responsibilities

The specific duties of those personnel who are responsible for the HSP are as follows:

- *Project Manager (PM)* - Provides an overview of site facilities, equipment, and personnel so that site activities can be conducted in a safe and efficient manner.
- *Health and Safety Coordinator (HSC)* - Develops HSP in conjunction with Project Manager and site HSR; reviews plan periodically and revises plan when new information becomes available; offers technical support to site HSR on health and safety issues; and audits work activities for adherence to HSP.

- *Site Health and Safety Representative (HSR)* - Implements the HSP; advises field team on aspects of on-site health and safety; selects and reviews protective clothing and equipment with input from HSC; monitors the field team members for signs of heat or cold stress; monitors on-site hazards and conditions; knows emergency procedures, evacuation routes, and emergency telephone numbers; and notifies public emergency officials when necessary.
- *Other Site Personnel* - Responsible for adhering to the provisions of the site HSP and all OSHA requirements specified in the plan.

1.5 Plan Components

The HSP contains information addressing the following areas:

- Health and safety training requirements
- Medical surveillance requirements
- Chemical and physical hazard evaluations and control measures
- Air monitoring parameters and equipment
- Delineation of site work zones and contaminant control
- Decontamination procedures – personnel and equipment
- Personal protective equipment and levels of protection
- Work limitations
- Contingency and emergency planning
- Record keeping

Section 2
Site Background

2.1 Site Description

The H.O.D. Landfill Superfund Site (the site) is located within the eastern boundary of the Village of Antioch in Lake County, northeastern Illinois. The site consists of approximately 51 acres of landfilled area out of the total 121.5 acres of property that make up the facility. Although the landfilled area is continuous, it consists of two separate landfill areas, identified as the "old landfill" and the "new landfill." The "old landfill" consists of 24.2 acres situated on the western third of the property. The "new landfill" consists of 26.8 acres located immediately east of, and contiguous to, the "old landfill" (see Appendix A). The two landfill areas have been legally delineated under an Illinois Environmental Protection Agency (IEPA) permit.

The site is bordered on the south and west by Sequoit Creek. Silver Lake is located approximately 200 feet southeast of the site. A large, seasonal wetland area extends south of the site from Sequoit Creek.

Surface drainage around the site is generally toward the Fox River, located approximately 5 miles west of the site. Locally, surface water flows from the site toward Sequoit Creek. Sequoit Creek flows west from Silver Lake along the southern boundary of the site, then flows north along the western boundary of the site. Approximately 250 feet north of the northwestern corner of the site, the creek channel turns west and the creek flows approximately 2 miles before discharging into Lake Marie. Lake Marie eventually discharges into the Fox River.

The landfill cover is continuous across the filled areas of the site. The landfill cover ranges in thickness from a total of 49 inches to 87 inches based on borings and test pits performed during the Remedial Investigation (Montgomery Watson, 1997). Refuse was generally encountered beneath the existing landfill cover. The landfill cover supports a healthy vegetative layer. Since the closure and capping of the site in 1989, precipitation has resulted in erosional rills and gullies in some areas of the landfill cover. Several areas of differential settlement and stressed vegetation have developed since the cap construction. Minor leachate seeps, animal burrows, and landfill gas (LFG) emission areas have also been noticed since the cap construction.

Based on aerial photographs and a 1960 United States Geological Survey (USGS) topographic map of the site area, the eastern portion of the site was a wetland area prior to landfill development. Seasonal wetlands exist within only the low elevation portion of the site, south of the "new landfill" area. The wetlands are limited to the areas outside the delineated landfill

boundaries. Sequoit Creek flows from Silver Lake by way of two stream channels, which eventually join and proceed through the seasonal wetlands.

2.2 Site Geology and Hydrogeology

The regional and site geology and hydrogeology were described in detail in the Remedial Investigation/Feasibility Study (Montgomery Watson, 1997). In general, the site geology consists of the following:

2.2.1 Surficial Materials

The surficial materials include clayey to gravelly topsoil, peat, and fill material (disturbed soil), and range in thickness from approximately 2 to 9 feet.

Isolated lenses of silty sand and organic-rich clay observed overlying the surficial sand unit are representative of fine-grained, post-fluvial environments, such as wetland or overbank deposits. A thin lense of sand and gravel exists near the surface north of the landfill. The lense does not appear to be areally extensive and does not extend into the landfill area.

2.2.2 Surficial Sand

The surficial sand is limited in both vertical and horizontal extent, exhibits an elongated geometry, and trends east-northeast/west-southwest along the southern boundary of the site.

The top of the surficial sand begins at depths ranging from 7.5 to 20 feet below ground surface. The unit ranges in thickness from 0 to approximately 54 feet. The surficial sand generally consists of light-brownish-gray to dark-gray, fine- to medium-grained sand and gravel. It is poorly to well sorted and contains angular to rounded gravel of mixed lithology.

2.2.3 Clay Diamicton

The clay diamicton is laterally extensive and is present beneath most of Lake County. The clay diamicton represents deposits of the Wadsworth Till Member. The clay diamicton is present beneath the entire site based on borings drilled during previous investigations.

The top of the clay diamicton is present immediately beneath the surface soil along the northern boundary of the site and may be as deep as 60 feet below ground surface, where it underlies the surficial sand south of the site. The thickness of the clay

diamicton ranges from greater than 100 feet (north of the site) to 10 feet south of the "old" landfill. The clay diamicton is typically massive; light gray to dark gray; and contains thin, isolated, discontinuous silt seams and sand seams. Lenses of clay and gravelly clay exist within the diamicton.

2.2.4 Deep Sand and Gravel

The deep sand and gravel is laterally extensive and is present beneath the entire site. The full thickness of deep sand and gravel is not known, but geologic logs in the vicinity of Antioch indicate a thickness of about 55 to 60 feet (Kay and Earle, 1990). The upper portion of this unit consists primarily of medium- to coarse-grained sand with some fine-grained sand and gravel. The unit is moderately well sorted and generally coarsens with depth. Lower portions of this unit are poorly sorted and contain greater percentages of gravel. The deep sand and gravel represents outwash deposits associated with the Haeger Till Member (Willman, et al., 1975).

As discussed in the RI/FS (Montgomery Watson, 1997), three unconsolidated hydrostratigraphic units underlie the site. Water-bearing glacial or recent deposits consist of the surficial sand, an underlying clay diamicton aquitard, and a deep sand and gravel aquifer.

2.2.5 Surficial Sand

The surficial sand is present along the southern site boundary and exhibits an elongated east-northeast/west-southwest trending geometry.

Water table conditions exist in the surficial sand. Groundwater in the sand generally flows from the perimeter of the surficial sand deposit toward Sequoit Creek. The direction of groundwater flow is influenced by Sequoit Creek, which traverses the southern and western boundary of the site. PELA installed shallow piezometers along the creek to evaluate surface water/groundwater interaction. Their evaluation indicated that shallow groundwater discharges to Sequoit Creek.

2.2.6 Clay Diamicton

The surficial sand is separated from the deep sand and gravel aquifer by the clay diamicton based on borings conducted in the vicinity of the site. The thickness of the clay diamicton varies beneath the site. Based on an isopach map of clay, the thickest portion of the clay may be in the northeastern part of the landfill. The lithologic description of the clay indicates that the clay is massive, plastic, and characterized by low hydraulic conductivity.

The clay diamicton impedes the movement of groundwater from the surficial sand to the deep sand and gravel aquifer, based on hydraulic head elevations observed in wells screened in each unit. Hydraulic head data collected by PELA on April 23, 1990, indicate that heads in the surficial sand range from approximately 761.6 to 764.5 feet M.S.L., while heads in the deep sand and gravel aquifer range from 727.3 feet to 730.8 feet M.S.L. This head differential of approximately 30 feet substantiates the poor hydraulic communication between the surficial sand and the deep sand and gravel aquifer, which results from the low hydraulic conductivity of the clay diamicton.

2.2.7 Deep Sand and Gravel Aquifer

The deep sand and gravel aquifer (DSGA) occurs beneath the entire site based on site borings. This unit has not been entirely penetrated at the site; therefore, its total thickness is unknown.

The deep sand and gravel aquifer is a confined or semiconfined aquifer. As indicated previously, groundwater elevations in the DSGA range from approximately 727 to 731 feet mean sea level (M.S.L.).

The preliminary results of the groundwater predesign investigation confirm the above discussion. The complete results and conclusions of the groundwater predesign investigation, including (1) the interpretation of the groundwater flow regime, and (2) an assessment of the effectiveness of natural attenuation to reduce the contaminant impacts to groundwater in the DSGA, are included in a report titled "Predesign Investigations, Groundwater" (RMT, in preparation).

Section 3
Health and Safety Training and Medical Surveillance

In order to meet OSHA requirements, all field personnel will participate in health and safety training and a medical surveillance program.

3.1 Health and Safety Training

Prior to beginning field activities, all RMT personnel conducting or observing on-site activities will be certified in the following health and safety training sessions:

- *Site-specific Health and Safety Plan Review* - During this session, this plan will be reviewed, and any special procedures will be outlined.
- *Health and Safety for Hazardous Waste Site Activities* - This one-time 40-hour training session includes the following elements: regulations, industrial hygiene, toxicology, respiratory protection, physical hazards, noise, temperature extremes, personal protective equipment, medical surveillance, air monitoring equipment, site control and decontamination, standard operating procedures, and confined space entry.
- *8-hour Health and Safety Refresher Training* - This training is required annually after the initial 40-hour training. It serves to review the key aspects of the 40-hour training.
- Site personnel who have had 40-hour training will have had 3 day's actual field experience under the supervision of a trained, experienced supervisor.

Training will also be provided to additional field personnel so that backup personnel can be assigned to perform RD/RA activities at the site as the need arises.

Documentation of attendance in training sessions will be maintained by the RMT Human Resources Department and the Health and Safety Coordinator. Site supervisory/management personnel have had supervisor training under 29 CFR 1910.120(e)(4).

The training requirements in OSHA Standard 29 CFR 1910.120 are to be followed, at a minimum, by all personnel that enter the site.

3.2 Medical Surveillance

RMT field personnel assigned to the site will be placed in a medical surveillance program prior to performing their first field assignment. Medical surveillance requirements contained in OSHA Standards 29 CFR 1910.134 and 29 CFR 1910.120 will be followed, at a minimum, for

RMT personnel who actively perform field sampling activities at the site. This surveillance will include an initial and annual medical examination.

The basic protocol for the medical examination includes the following:

- Health history
- Vital signs and physical examination screen
- Pulmonary function test
- Urinalysis
- Heavy metal screen
- Blood chemistry screen
- Vision test
- Hearing test

The initial examination includes an EKG and chest X-ray, in addition to the annual tests listed above. Field personnel assigned to conduct these investigations will have passed the required medical examination as determined by the occupational health physician before entering the project site.

The medical records of personnel are kept on file at the examining physician's clinic. A certificate of medical fitness or specified work restrictions is maintained in the employee's personnel file.

Section 4
Hazard Evaluation

This section describes the possible hazards associated with the H.O.D. Landfill based upon information that is available. The hazard evaluation has been prepared to meet the requirements of OSHA Standard 1910.120 and, as such, includes information regarding chemical hazards, physical hazards, and any other relevant site hazards.

Information regarding potential health effects associated with the site-related constituents is based upon maximum estimates of constituent concentrations and exposure parameters designed to err on the side of overestimating the potential occupation-related risks. Possible hazards include exposure to explosive levels of methane gas, oxygen-deficient atmospheres, and exposure to contaminated groundwater and/or leachate. Listed in Table 4-1 are general site job safety hazards, hazard control measures, and specific site tasks where hazards may be encountered.

4.1 Chemical Hazard Characterization

The following chemical information is presented in order to identify the types of materials that may be encountered at the facility.

These chemicals may exist in liquid, solid, gas, and/or refuse. They may be flammable, volatile, and/or toxic. Exposure limits for the chemicals of potential concern are presented in Table 4-2.

4.1.1 Combustible Gas (Explosive Environment)

The methane gas produced by the microbial activity in the landfill and other combustible gases that may be present in the landfill may act as hazardous compounds in two specific ways. First, methane is a flammable gas and may combust when ambient concentrations are between 5 percent and 15 percent by volume in air, (the Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL) of methane, respectively). Explosions can occur when combustible gases are ignited in confined areas. It will be necessary to have continuous monitoring for combustible gas in the appropriate work areas and to provide engineering controls in areas that have concentrations greater than 25 percent of the LEL. Second, methane is considered a simple asphyxiant: it displaces the oxygen normally breathed in the air. Methane has no odor and is not irritating to eyes, nose, or throat. However, in association with landfill gas, it is easily detected by its odor.

Table 4-1
General Job Safety Hazards and On-site Control Measures

POTENTIAL HAZARDS	HAZARD CONTROL MEASURES	PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	TASK BREAKDOWN
Heavy equipment	■ Isolate equipment swing areas. ■ Make eye contact with operators before approaching equipment. ■ Understand and review hand signals.	Hard hat, safety glasses	All job functions
Sharp objects	■ Wear cut-resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. ■ Maintain all hand and power tools in a safe condition. ■ Keep guards in place during use.	Leather gloves	Installation of erosion control, extraction well construction, installation of piping, blower/flare construction, fence installation, drum handling, relocation of waste
Contact dermatitis	■ Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants. ■ Identify and review poisonous plants with workers.	Tyvek coveralls; duct tape bottom of coveralls to boots or latex boot covers	Waste relocation, monitoring, sampling, piping installation, drum handling
High noise levels	■ Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period).	Ear plugs	Site grading, waste relocation, installation of LFG and leachate piping, gas probe and well installation, fence construction, access road construction, blower/flare construction
High/Low ambient temperature	■ Provide fluids to prevent worker dehydration. ■ Dress adequately for temperatures encountered. ■ Work schedule may be modified if ambient temperatures are below 20°F as measured by wind chill factor.		All job functions

Table 4-1 (Continued)
General Job Safety Hazards and On-site Control Measures

POTENTIAL HAZARDS	HAZARD CONTROL MEASURES	PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	TASK BREAKDOWN
Slips, trips, falls	■ Clear walkway work areas of equipment, tools, vegetation, excavated material, and debris. ■ Mark, identify, or barricade other obstructions.		All job functions
Inhalation and contact with hazardous substances	■ Provide workers proper skin, eye, and respiratory protection based on the exposure hazards present. ■ Review hazardous properties of site contaminants with workers before operations begin.	Tyvek coveralls, nitrile gloves, latex or neoprene boots, respirators (see Section 7 of the HSP)	Sampling and monitoring, leachate tank installation, extraction well and gas probe installation, waste relocation, drum handling, pressure washing
Utilities	■ Mark and locate underground utilities. This will be done by Contractor. ■ Flag overhead utilities as necessary.		Extraction well and gas probe installation, site grading, blower/flare construction, fence installation, waste excavation
Excavation cave-in	■ Comply with 1926.650, Subpart P.		Leachate tank installation, pipe installation, waste excavation
Fires	■ Eliminate sources of ignition from the work area. ■ Prohibit smoking. ■ Provide ABC (or equivalent) fire extinguishers for all flammable storage areas, powered cutting equipment refueling areas, fuel-powered generators, and compressors. ■ Store flammable liquids in well ventilated areas. ■ Prohibit storage and transfer of flammable liquids in plastic containers. ■ Enforce use of approved flammable liquid safety cans. ■ Post "NO SMOKING" signs. ■ Store combustible materials away from flammables.		All job functions

Table 4-1 (Continued)
General Job Safety Hazards and On-site Control Measures

POTENTIAL HAZARDS	HAZARD CONTROL MEASURES	PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	TASK BREAKDOWN
Eye injuries	■ Wear safety glasses. ■ Wear ANSI-approved sunglasses in sunny weather.	Safety glasses (clear or tinted)	All job functions
Insect/Snake bites	■ Review injury potential and types of snakes with workers. ■ Avoid insect nest areas, likely habitats of snakes, outside work areas. ■ Emphasize the "buddy system" where such injury potential exists. ■ Use insect repellant, and wear PPE to protect against sting/bite injuries.	Long-sleeve shirts, long pants	All job functions

Table 4-1 (Continued)
General Job Safety Hazards and On-site Control Measures

POTENTIAL HAZARDS	HAZARD CONTROL MEASURES	PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	TASK BREAKDOWN
Electrical shock	■ De-energize or shut off utility lines at their source before work begins. ■ Use double insulated or properly grounded electric power-operated tools. ■ Maintain tools in a safe condition. ■ Provide an equipment-grounding conductor program or employ ground-fault circuit interruptors. ■ Follow lockout/tagout procedures as applicable when working with electrical or mechanical equipment. ■ Use qualified electricians to hook up electrical circuits. ■ Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation. ■ Cover or elevate electric wire or flexible cord passing through work areas to protect from damage. ■ Keep all plugs and receptacles out of water. ■ Use approved water-proof, weather-proof equipment if exposure to moisture is likely. ■ Inspect all electrical power circuits prior to commencing work.		Blower/Flare building construction, extension of electrical power to site, temporary electrical circuits to field trailers and support stations
Work on or near surface water bodies	■ If water is more than 2 ½ feet deep, wear U.S.C.G.-approved flotation devices. ■ Conduct work under the buddy system. ■ Use restraining systems if current is strong.	Flotation devices	Surface water sampling, sediment sampling

Table 4-1 (Continued)
General Job Safety Hazards and On-site Control Measures

POTENTIAL HAZARDS	HAZARD CONTROL MEASURES	PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	TASK BREAKDOWN
Materials handling (concrete and bentonite products)	■ Wear dust/filter masks when handling powdered concrete and/or bentonite materials. ■ Avoid dermal contact with these materials.	Dust/filter mask (particulate) Gloves (leather or rubber)	Groundwater and gas monitoring well construction
Traffic	■ If working in or near traffic areas, wear orange safety vests for visibility. ■ Be alert. ■ Use traffic control devices, if necessary.	Orange safety vests with reflective strips	Construction of access roads
Handling heavy objects	■ Observe proper lifting techniques. ■ Obey sensible lifting limits (60 lb maximum per person manual lifting). ■ Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads.	Steel-toe boots	All job functions
Toxic/Explosive atmospheres	■ Conduct air monitoring. ■ Install and maintain access controls.	Respiratory protection	All intrusive activities, including sampling and monitoring, gas probe and extraction well installation; drum handling

Table 4-2
Exposure Limits
Remedial Action
H.O.D. Landfill
Antioch, Illinois
March 2000

COMPOUNDS	MEDIA	PEL[1]	TLV[2]	STEL
Volatile Compound				
Acetone	L,S,LG	1000 ppm	500 ppm	1,000 ppm
2-Butanone (MEK)	L,LG	200 ppm	200 ppm	300 ppm
4-Methyl-2-pentanone	L	None established		
2 Hexanone	L	100 ppm	5 ppm	--
Toluene	L,S,LG	200 ppm	50 ppm	--
Xylenes	L,S,LG	100 ppm	100 ppm	150 ppm
Ethylbenzene	L,S,LG	100 ppm	100 ppm	125 ppm
Benzene	L,S,LG	1 ppm	0.5 ppm	5 ppm
Tetrachloroethene	L,LG	100 ppm	25 ppm	--
Trichloroethene	L,GW,LG	100 ppm	50 ppm	--
1,2-Dichloroethene	L,GW,LG	200 ppm	200 ppm	--
1,1-Dichloroethene	L,LG	100 ppm	100 ppm	--
Vinyl chloride	L,GW,LG	1 ppm	1 ppm	
Methylene chloride	L,S,LG	25 ppm	50 ppm	125 ppm
1,4-Dichlorobenzene	S	50 ppm	50 ppm	200 ppm
Phenol	L	5 ppm	5 ppm	--
Dibenzofuran	S	None established		--
Carbazole	S	None established		--
2,4-Dimethylphenol	L	None established		--
4-Methylphenol	L	5 ppm	5 ppm	--
Diethylphthalate	L	None established	5 mg/m^3	--
Bis-2-ethylhexylphthalate	S	5 mg/m^3	0.1 mg/m^3	--
Acenaphthene	S	5 mg/m^3	0.1 mg/m^3	--
Anthracene	S	5 mg/m^3	0.1 mg/m^3	--
Benzo(b) flouranthene	S	5 mg/m^3	0.1 mg/m^3	--
Fluoranthene	S	5 mg/m^3	0.1 mg/m^3	--
Fluorene	S	5 mg/m^3	0.1 mg/m^3	--
Phenanthrene	S	5 mg/m^3	0.1 mg/m^3	--
Pyrene	S	5 mg/m^3	0.1 mg/m^3	--
2-Methylnaphthalene	S	5 mg/m^3	0.1 mg/m^3	--
4,4-D,D,D	S	None established	None established	--
Naphthalene	L	10 ppm	10 ppm	15 ppm
Ethyl chloride (chloroethane)	LG	1,000 ppm	100 ppm	--

Table 4-2 (continued)
Exposure Limits
Remedial Action
H.O.D. Landfill
Antioch, Illinois
March 2000

COMPOUNDS	MEDIA	PEL[1]	TLV[2]	STEL
Other				
Hydrogen sulfide	LG, L, GW	10 ppm	10 ppm	--
Total dust	S	15 mg/m³	--	--
Respirable dust	S	5 mg/m³	--	--
Chromium	L,S,GW	1.0 mg/m³	0.5 mg/m³	
Calcium	L,GW	15 mg/m³	10 mg/m³	
Magnesium	L,GW	15 mg/m³	10 mg/m³	
Manganese	L,GW	5 mg/m³	0.2 mg/m³	3 mg/m³
Iron	L,GW	10 mg/m³	5 mg/m³	
Aluminum	L	15 mg/m³	2 mg/m³	
Beryllium	S, GW	2 mg/m³	0.5 mg/m³	--
Barium	S, GW	15 mg/m³	10 mg/m³	--
Antimony	S	0.5 mg/m³	0.5 mg/m³	--
Cobalt	S, SW	0.5 mg/m³	0.5 mg/m³	--
Cadmium	S	0.005 mg/m³	--	--
Lead	S, SW	0.05 mg/m³	0.1 mg/m³	--
Nickel	S, SW	1 mg/m³	--	--
Potassium	L,GW	None established		
Thallium	S, SW	None established		--
Zinc	S, SW	5 mg/m³	5 mg/m³	--
Sodium	L,GW	None established		
Carbon disulfide	GW,LG	20 ppm	10 ppm	100 ppm

Notes:

PEL	Permissible exposure limit
PPM	Parts per million
STEL	Short-term exposure limit
TLV	Threshold limit value
L	Leachate
LG	Landfill gas
S	Soil
GW	Groundwater
SD	Sediment
mg/m³	Milligrams per cubic meter

Footnotes:

(1) Permissible Exposure Limits (PELs) and Short-Term Exposure Limits (STEL), U.S. Department of Labor, OSHA.
(2) American Conference of Governmental Hygienists (ACGIH) Threshold Limit Values (TLV) for 1999.

If methane is inhaled in large quantities, dizziness, difficulty in breathing, and/or loss of consciousness may occur. If these effects are noted, the victim should be removed to fresh air and allowed to breathe freely until dizziness has passed. If the victim is unconscious and not breathing, artificial respiration should be initiated. A methane detector will be used to monitor ambient methane concentrations in areas where methane gas may be expected to occur.

4.1.2 Oxygen Deficiency

The microbial activity in the site, which produces methane gas, also uses available oxygen, thus producing an oxygen-deficient atmosphere. Oxygen-deficient atmospheres can initiate drowsiness, loss of mental capabilities, and even death within just minutes. Appropriate work areas at this site will be monitored on a continuous basis for oxygen-deficient atmospheres if they are suspected. Any areas containing 19.5 percent oxygen or less are unsafe, and project personnel should avoid such areas until the oxygen level is confirmed safe by the Site HSR.

4.1.3 Hydrogen Sulfide

Hydrogen sulfide (HS) has a strong rotten egg odor. The OSHA PEL for HS is 10 ppm, and it has a time-weighted average (TWA) of 10 ppm (ACGIH). HS affects the respiratory system, lungs, and eyes, and may cause dizziness, headache, and fatigue. It also produces olfactory fatigue, such that high concentrations or continuous exposure to low concentrations render it undetectable by the human sense of smell. A hydrogen sulfide detector will be used to monitor ambient HS concentrations in areas where HS gas may be expected to occur.

4.1.4 Contaminated Groundwater, Leachate, and Soil

Based on information presented in the RI, the following substances (see Table 4-2) may be present in the groundwater, leachate, and soil at concentrations that could represent hazards to unprotected project workers:

Volatile Organic Compounds (VOCs)

VOCs present in leachate and in landfill material may require staff to use respiratory protection. Standard hazardous waste site protocols require adequate respiratory protection to be worn in areas where breathing zone concentrations of VOCs are elevated above Permissible Exposure Limits (PELs).

VOCs with low PELs that are known or expected to occur at this site include benzene, vinyl chloride, phenol, and 4-methylphenol. Symptoms of exposure

to these compounds include headache; irritation to eye, nose, throat, and mucous membranes; weakness; muscle aches; abdominal pain; confusion; nausea; and respiratory and central nervous system effects. Ambient concentrations of VOCs will be monitored in areas where leachate and waste occur using a photoionization detector.

Semivolatile Organic Compounds (SVOCs)

The primary potential routes of exposure to VOCs are inhalation of gases and vapors, and skin contact with contaminated soil, liquids, or articles. The primary potential route of exposure to SVOCs is skin contact. Secondary routes of exposure would be inhalation of particles containing SVOCs under conditions of high airborne dust and accidental ingestion from contact with contaminants or contaminated articles. Symptoms of overexposure to organic compounds from acute and chronic exposures to high concentrations include eye, nose, and upper respiratory irritation, abdominal pain, headaches, nausea, vomiting, central nervous system depression, inebriation, incoherence, vertigo, weakness, numbness, tremor, low blood pressure, cardiac arrhythmia, shock, coma, dermatitis, bronchitis, liver damage, kidney damage, and lung damage.

SVOCs detected in leachate samples include the following:

- Phenol
- 2,4-Dimethylphenol
- 4-Methylphenol
- Naphthalene
- Diethylphthalate

Metals and Inorganics

The primary potential route of exposure to metals would be accidental ingestion from contact with contaminants or contaminated articles. A secondary route of exposure would be inhalation of particles containing metals under conditions of high airborne dust. Symptoms of chronic overexposure to high concentrations of metals and inorganics include gastro-intestinal irritation; abdominal pain and cramps; nausea; diarrhea; headaches; tremor; eye, nose, and upper respiratory irritation; general weakness; insomnia; changes in skin or gum pigmentation; anemia; kidney damage; pneumoconiosis; asthma; coughing; and muscle aches. Site-specific concentrations of metals and inorganics in soil were used to calculate real-time exposure levels for

particulates. Based on conservative calculations, metals and inorganics do not present a threat to inhalation at the H.O.D. site. Therefore, particulate monitoring will focus on the 29 CFR 1910.1001, Subpart Z, Table Z-3, Inert or Nuisance Dust guidelines. Particulate filters will be worn by site staff when total dust levels exceed the PEL of 15 mg/m^3 or when respirable dust levels exceed the PEL of 5 mg/m^3.

4.1.5 Radiological Hazards

Based on information presented in the RI, no radiological hazards are anticipated at the site. If evidence of radiological hazards is encountered, work will be stopped until the RMT CHSM determines what health and safety procedures are appropriate and authorizes work to recommence.

4.1.6 Drums and Containers

Should drums need to be removed from excavations or trenches, an exclusion zone will be established around the excavation area. This zone will be surrounded by caution tape or temporary fencing.

Upon discovery of drums, a licensed waste removal and hauling firm will be contacted to conduct the drum removal. RMT staff will not conduct drum characterization or removal activities. All personnel assigned to support tasks in the exclusion zone during drum removal activities will wear Level C protective equipment at a minimum as described in Section 7 and will properly decontaminate when leaving the exclusion zone. A less stringent level of protection may be dictated by action levels as specified in the Health and Safety Plan (HSP) and determined by measuring the level of contaminants in the breathing zone with portable health and safety monitoring equipment. A particulate monitor, photoionization detector (PID) or flame ionization detector (FID), and a combustible gas meter (LEL monitor) will all be used for air monitoring during drum characterization or removal activities as dictated by Section 5.

4.2 Physical Hazards

4.2.1 Snakes, Ticks, and Other Insects

The H.O.D. Landfill and surrounding areas contain wetlands, grassy areas, and creeks. Due to these site features, snakes may be encountered at the work site. For protection against snake bites, personnel will be provided with snake boots or snake leggings, as appropriate.

Ticks may also be encountered at the site during warm weather. An appropriate tick repellent will be available on-site for personnel use. Staff are also encouraged to wear light-colored clothing, as this will make ticks more readily visible. A detailed discussion of lyme disease is included as Appendix B.

Site personnel who are allergic to insect stings will have a personal bee sting kit or equivalent on-site for emergency use.

4.2.2 Poisonous Plants

Due to the site features at the H.O.D. Landfill (wetlands, grassy areas, low brush, forested creeks) and the landfill's location, poison ivy, poison oak, and poison sumac may be encountered. The key to protection from these urushiol-containing plants is the ability to recognize and avoid the plants that carry the poison. A full discussion of identification, avoidance, and treatment of the effects from poisonous plants is included in Appendix C.

4.2.3 Excavation and Trenching

Excavation activities involve several risks to personnel involved in such activities. Personnel will refrain from entering excavations that would present a confined or otherwise permitted-entry space. Contractors performing excavation have the responsibility of complying with OSHA 29 CFR 1926 and any other applicable regulations pertinent to their expertise. At a minimum, the following requirements must be met:

- Before opening any excavation, efforts must be made, including utility company contact, to determine if there are underground utility installations in the area. Utilities will be located and supported if necessary during the excavation operations.
- The walls and faces of trenches 5 feet or more deep, and all excavations in which employees are exposed to danger from moving ground or cave-in, will be guarded by a shoring system, sloping of the ground, or some other equivalent means.
- In excavations that employees may be required to enter, excavated or other material will be effectively stored and retained at least 2 feet or more from the edge of the excavation.
- Daily inspections of excavations will be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation will cease until the necessary precautions have been taken to safeguard the employees.
- Trenches 4 feet deep or more will have an adequate means of exit, such as ladders or steps, located so as to require no more than 25 feet of lateral travel.

- Excavations that have to remain open at the end of daily operations must be appropriately marked off and signaled for hazard.

4.2.4 Utilities

Overhead or underground utilities, such as electric, gas, telephone, water, sewer, or drainage, in the project work areas will be located by contractors before the start of operations that require subsurface work or the moving and setup of heavy equipment by the contractor. Information regarding the location of utilities will be kept at the field office for reference.

4.2.5 Heavy Equipment

Heavy equipment, such as drilling and earthmoving equipment, used on-site is under the control of the subcontractor, who is responsible for maintaining the equipment in good working order and operating it safely. Heavy equipment must have audible backup alarms in working condition. RMT personnel will not work near equipment that they judge to be unsafe because of deterioration, missing parts, obvious defects, or improper operation.

Operation of heavy equipment in areas with steep embankments or unstable ground will be avoided. If it is necessary to operate equipment in these areas, the subcontractor will make provisions for the safety of RMT personnel in the area.

4.2.6 Noise

Hearing protection must be worn by personnel when they are exposed to noise levels above 84 decibels (dBA). Heavy equipment, when in operation, generally results in exposure levels that exceed 84 dBA for personnel working at or near the equipment. A "rule of thumb" to follow is for personnel to wear hearing protection if they must raise their voices to be heard at arm's length. RMT personnel will comply with the RMT Hearing Conservation Program.

4.2.7 Temperature Extremes

The RD/RA is expected to progress throughout 2000. The time frame of the project will cause site personnel to potentially be exposed to both heat stress and cold stress.

Cold Stress

Persons working outdoors in low temperatures, especially at or below freezing, are subject to cold stress. Areas of the body that have a high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible to damage.

Protective clothing generally does not afford protection against cold stress. In many instances, it increases susceptibility due to a reduction in wind chill awareness and exposure to lower than perceived ambient temperatures.

Two factors influence the development of cold injury: ambient temperature and wind velocity. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. A copy of the wind chill chart is included as Table 4-3.

Site personnel will be instructed on the signs and symptoms of cold stress and on the methods of preventing cold-related disorders. In general, the two major cold-related disorders are frostbite and hypothermia:

- *Frostbite* - Sudden blanching of the skin, progressing to skin with a waxy or white appearance that is firm to the touch, while the tissue beneath the skin is resilient. For treatment, bring the victim indoors, and warm the areas quickly in warm water. **Never** place frostbitten tissue in hot water, as the area will have a reduced heat awareness and such treatment may result in burns. Give the victim a warm drink. The victim must not smoke. Keep the frozen parts in warm water or covered with warm clothes for 30 minutes. The tissue will be very painful as it thaws. Then, elevate the injured area and protect it from physical injury. Do not allow blisters to be broken. Use sterile, soft, dry material to cover the injured areas. Keep the victim warm, and seek immediate medical care.
- *Hypothermia* - Hypothermia may be the greatest concern in the winter months and may be caused by exposure to freezing or rapidly dropping temperatures. The symptoms of systemic hypothermia are usually exhibited in the following stages:
  - Shivering
  - Apathy, listlessness, drowsiness, and (sometimes) rapid cooling of the body to less than 95°F
  - Unconsciousness, glassy stare, slow pulse, and slow respiratory rate
  - Freezing of the extremities

  For treatment, keep the victim warm, and seek immediate medical care.

Table 4-3
Wind Chill Chart
Remedial Action
H.O.D. Landfill
Antioch, Illinois
June 2000

Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Wind speeds greater than 40 mph have little additional effect	*LITTLE DANGER* For less than 1 hour with dry skin. Maximum danger of false sense of security.				*INCREASING DANGER* Danger from freezing of exposed flesh within 1 minute.			*GREAT DANGER* Flesh may freeze within 30 seconds.				
	Trenchfoot and immersion foot may occur at any point on this chart.											

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

Each person will watch for personal signs of frostbite and hypothermia as well as signs in team members. If temperatures drop below 20°F, as measured by the wind chill index, thermal clothing will be required and field activities will be curtailed unless the activity is of an emergency nature.

Heat Stress

The USEPA Standard Operating Safety Guides (1992) recommend that a heat stress monitoring program be implemented when employees are wearing impervious clothing and ambient temperatures are 70°F or above. The frequency of monitoring should increase as temperatures increase, and employees should be monitored after each 2-hour work period when ambient temperatures exceed 85°F. The following paragraph describes the monitoring program recommended by the USEPA. This program will be used by site personnel when ambient temperatures exceed 70°F.

Heart rate (HR) should be measured at the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute. If the HR is higher, the next work period should be shortened by 33 percent while the length of the rest period stays the same. If the pulse rate is 110 beats per minute at the beginning of the next rest period, the following work cycle should be shortened by another 33 percent.

All personnel must be instructed on the symptoms of the main heat-related disorders and on the ways to recognize these disorders. These disorders and their symptoms are outlined below:

- *Heat rash*: Decreased ability to tolerate heat, chafing clothes, raised red vesicles on affected areas
- *Heat cramps*: Muscle spasms and pain in the extremities and abdomen
- *Heat exhaustion*: Shallow breathing; pale, cool, moist, clammy skin; profuse sweating; dizziness, and lassitude (weakness); fainting. Medical attention is warranted.
- *Heat stroke*: Red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong rapid pulse; coma. *This condition is life-threatening, and immediate medical assistance must be obtained.*

Because it may not always be feasible to follow the work/rest regimen outlined above, site personnel should take a break every 2 hours, at a minimum, and drink adequate amounts of nonalcoholic fluids. An average of 1 quart of liquid

per hour is recommended. In addition, the following actions can help reduce heat stress:

- In extremely hot weather, conduct nonemergency response operations in the early morning and evening.
- In hot weather, rotate workers wearing protective clothing.
- Clothing should be permitted to dry during rest periods. Workers who notice skin problems should immediately consult the Site HSR.

4.2.8 Dust

Dust may be present at the site due to the operation of heavy equipment. A water truck will be employed to control the generation of dust. Air monitoring as discussed in Section 5 will be performed, and will aid in determining the amount of dust control needed at the site. Based on air monitoring results, level of protection modifications will be performed as described in Subsection 7.2.

4.2.9 Other Physical Hazards

Hazards related to sharp objects; slips, trips, and falls; and lifting heavy objects will be reduced by engineering controls. Employees will be required to wear safety glasses and gloves when working with sharp objects. To minimize slips, trips, and falls, walkways will be kept clear of equipment, tools, vegetation, excavated material, and debris. Also, obstructions will be clearly marked, identified, or barricaded. To minimize personal exposures, staff will wash exposed skin areas immediately after cessation of daily work activities. Finally, heavy lifting will be limited to 60 pounds per person and proper lifting techniques will be employed. Mechanical equipment will be used to move large, awkward loads.

Section 5
Air Monitoring

5.1 Purpose

Airborne contaminants will be monitored to ensure compliance with OSHA standards for on-site workers. In addition, National Air Quality Standards (NAAQS) will be utilized for particulate matter. Air monitoring equipment will be used to monitor VOCs in the work area in accordance with the RA Health and Safety Plan. It will be assumed that, as long as the VOC concentrations in the work zone are acceptable, then the ambient air quality off-site is acceptable in regard to VOC concentrations.

Air monitoring will be conducted to help ensure that the level of respiratory protection selected is adequate for the various field investigation work tasks. Changes in the level of protection may be required if significant changes in airborne contaminants occur. The breathing zone of all potentially exposed workers will be monitored whenever any of the following situations arise:

- Work begins at different portions of the site.
- New contaminants are noted.
- A new/different phase of work is started.
- Work is being performed in areas with obvious liquid contamination.
- Intrusive activities are being performed.
- Samples are being collected.
- Site staff exhibit symptoms of exposure to contaminants.

5.2 Monitoring Procedures

All monitoring equipment will be calibrated at the beginning and end of each work day. In general, calibration procedures involve using cylinders of calibration gases at known concentrations to calibrate the instrument. Calibration will be documented in the field logs. For instrument-specific calibration techniques, refer to manufacturers' calibration guidelines (copies of these guidelines will be kept at the site during field activities). When air monitoring is required, area air samples will be taken at the following locations daily, or when activities are undertaken that may indicate a change in the levels of airborne contaminants; and the time and the results of the monitoring will be recorded:

- Upwind of work areas to establish background air contaminants
- In support zone to check for contamination
- Along decontamination line to check that decontamination workers are properly protected and on-site workers are not removing protective equipment in a contaminated area
- At exclusion zone to verify level of protection and exclusion zone boundaries

5.3 Air Monitoring Equipment

- An Hnu or OVM photoionization detector (PID) with an 11.7 eV lamp (or equivalent) will be used by the Site HSR to monitor air quality at the work site. This will be done to assess the relative levels of organic airborne contaminants and to aid in site assessment.
- An Industrial Scientific Meter (or equivalent) will be used to detect any presence of explosive landfill gases and determine oxygen and hydrogen sulfide levels.
- Selected colorimetric tubes will be available for use in testing for the presence of specific toxic compounds, such as vinyl chloride, benzene, and phenol.
- A real-time aerosol monitor (MiniRam or equivalent) will be used to monitor airborne particulates.

5.4 Response to Airborne Contaminants

The following general guidelines will be used by the Site HSR as part of the decision-making criteria for establishing the appropriate level of protection. Note that increasing or decreasing levels of oxygen or combustible gases may indicate the presence of other substances (i.e., organic vapors in elevated concentrations).

- *Organic vapors* - If instrument readings are less than or equal to background (i.e., zero), Level D protection as defined in Subsection 7.1 will be used. If PID instrument readings are greater than 5 instrument units above background, colorimetric tubes will be used to check for the specific presence of benzene, vinyl chloride, and phenol. If benzene levels are above 1 ppm, Level C protection will be used. If vinyl chloride levels are above 1 ppm, Level C protection will be used. If phenol levels are above 5 ppm, Level C protection will be used. If vinyl chloride levels approach 10 ppm or benzene levels approach 50 ppm, employees will be required to upgrade to Level B protection. If PID instrument readings exceed 5 instrument units above background levels, and colorimetric monitoring indicates that concentrations of vinyl chloride, benzene, and phenol are less than the values listed above, Level C protection will be used. If ambient PID levels approach 63 ppm (one-half the STEL for methylene chloride and ethylbenzene), employees will be required to upgrade to Level B protection.
- *Combustible gas* - If instrument readings are above 25 percent of the LEL, operations will cease and workers will move to a safe area. The workplan will be re-evaluated, and engineering controls will be implemented to reduce levels below 10 percent of the LEL.

- *Hydrogen sulfide* – If instrument levels are above 10 ppm, operations will cease, and workers will move to a safe area. The workplan will be re-evaluated, and engineering controls will be implemented to reduce HS levels below 10 ppm.
- *Oxygen-deficient atmospheres* – If instrument levels are 19.5 percent oxygen or less, operations will cease, and workers will move to a safe area until oxygen levels are above 19.5 percent oxygen.
- *Airborne particulates* – If instrument readings are greater than 15 mg/m^3 total dust or 5 mg/m^3 respirable dust, Level C protection as defined in Subsection 7.1 will be used. In addition, engineering controls (e.g., water) will be used to reduce levels. Refer to Subsection 7.2 for a further description of criteria required for modifications to the level of protection.

5.5 Documentation

Air monitoring readings will be recorded in field log-books. The names of personnel working in the area, the date, the time, the location, the task being conducted, the concentration levels, and any observations noted will be included.

Section 6
Site Control Measures

Site control minimizes the transfer of contaminants from and within the project site. Two contamination control methods are the establishment of work zones at the project site and the decontamination of field personnel and equipment.

6.1 Work Zones

Where necessary to prevent the spread of contaminants during the work, field personnel will delineate an exclusion zone, a contamination reduction zone, and a support zone. The exact locations of these zones will be determined at the start of the work depending on accessibility, traffic, support functions, and other parameters affecting location selection. At a minimum, the exclusion zone will include the area of potentially contaminated surface soil. All work zones containing open excavations will be marked by barrier tape and cones.

6.1.1 Exclusion Zones

Exclusion zones are areas where hazardous substances may be present based on available information. RMT personnel entering exclusion zones will be required to conduct the specified air monitoring and wear the required protective clothing as outlined in Sections 5 and 7. Entry and exit points will be established at the periphery of the exclusion zone.

6.1.2 Contamination Reduction Zone

The contamination reduction zone is a transition zone between contaminated, or potentially contaminated, and clean zones. It serves as a buffer to reduce the possibility of the support zone becoming contaminated. For all temporary exclusion zone sampling areas, the contaminant reduction zone will be located just outside of the temporary exclusion zones.

Decontamination procedures, outlined in Subsection 6.2, will be performed in the contamination reduction zones for all source areas. Personnel entering and exiting the contamination reduction zones will have one entry/exit check point at the support boundary of the contamination reduction zone.

Field personnel will wear the required personal protection while working in the contamination reduction zones. Before personnel enter the support zones, they will

remove protective equipment worn in the contamination reduction zones according to the procedures presented in Subsection 6.2.

The decontamination pad area will be constructed on top of the landfill near the existing access road and leachate manholes. Personnel decontamination areas will be located at proposed investigation points.

6.1.3 Support Zone

The support zone is a noncontaminated or clean area. Support zones will be located outside of the contamination reduction zones. Protective clothing is not required in the support zone. Support equipment, such as clean protective equipment, supplies, sanitary facilities, and drinking water will be located in these zones, which will include a support trailer or field vehicle. The location of the support zone and any support facilities will be determined based on the following factors:

- Accessibility
- Support services—electric power supply, roads, drinking water, etc.
- Wind direction

6.2 Decontamination Procedures

Whenever field personnel or equipment leave the exclusion zones, they must follow prescribed decontamination procedures.

6.2.1 Field Personnel

Protective outer garments (e.g., coveralls) will be removed and placed in disposable plastic bags at the perimeter of the contamination reduction zone. Level C and D decontamination procedures will be as follows:

- Before exiting the exclusion zone, remove gross soil and trash from boots and gloves using water and a brush.
- Remove outer gloves first, if used. Remove protective coveralls by rolling them inside out from the upper torso to the feet.
- Wash/Rinse impervious safety boots as appropriate before removing them in the contamination reduction zone. After removal, place boots in a plastic bag for next transport to the exclusion zone.
- For Level C work, first remove the respirator, then the spent cartridges or canisters to clean the face piece.
- Remove inner gloves if used.

- Staff will wash and dry their hands before leaving the support zone, and place used paper towels in disposal bags.

The plastic bags containing the protective equipment waste materials will be stored on-site in a covered roll-off container. Any investigation-derived waste materials will be placed in one of the waste reconsolidation areas as shown on RD plan set Sheet No. 4.

Clean outer garments will be kept accessible to field personnel in the support zone. Water, soap, and paper towels will be kept in the support zone for both regular cleanup and emergency use.

6.2.2 Sampling In-field Measurement

Subsection 4.9 of the FSAP address the decontamination procedures for sampling in-field measurement.

6.2.3 Heavy Equipment and Drilling Equipment Decontamination

All equipment entering the contamination zone and directly contacting waste or contaminated materials will follow the decontamination procedures described below prior to leaving the site:

- All equipment decontamination will occur on-site
- Pressure washing will be conducted at the designated decontamination pad area
- Personnel will wear Modified Level D protection while pressure washer cleaning to prevent dermal contact with contaminated liquids
- Any equipment left on-site at the end of the day in a contaminated status will be left on the contaminated portion of the decontamination pad area

6.3 Other Site Personnel

"Other site personnel" refers to government employees, nonessential contractor personnel, local community representatives, and any other persons not actively involved in the RD/RA who enter the RA work zones. Other site personnel entering the facility to observe or participate in RA activities must report directly to the HSR upon reaching the source area under investigation.

The exclusion zone is the zone where hazardous substances are likely to be present. During field activities at the site areas, all personnel entering this zone must wear the required protective equipment and be currently trained.

If a fire, explosion, or toxic gas/vapor release occurs while visitors are present on-site, the visitors will immediately evacuate the area, using the evacuation plan as outlined in Subsection 8.2.

Section 7
Personal Protective Equipment

Protective clothing must be worn whenever the potential exists for employees to come in contact with, or to be exposed to, contaminated material. Worker personal protective equipment (PPE) for intrusive activities will begin at Level C protection based on the levels of contaminants found in leachate samples and on information available on potential health and safety hazards at the site. If monitoring data demonstrate that vinyl chloride levels are approaching 10 ppm or benzene levels are approaching 50 ppm, Level B PPE will be required for all employees working within the EZ. The determination for Level C respiratory protection for exposure to vinyl chloride below 10 ppm and benzene below 50 ppm is per 29 CFR 1910.1028 and 29 CFR 1910.1017. Other means of protection include using the buddy system and employing work limitations. Protection levels may be changed as determined by the site HSR based upon site conditions and air monitoring results (refer to Table 7-1).

7.1 Levels of Protection

Three levels of protection are specified in this HSP. Modified Level D will be the standard level of protection anticipated for the RA. Level B is the highest level of protection currently approved for RMT staff at this site. Level C is intermediate between levels B and D. As noted elsewhere, should site conditions indicate that Level B protection is required, all work will stop and site conditions and personal protection will be re-evaluated.

Personnel performing intrusive activities on-site will begin in Level C protection with air monitoring as defined in Section 5. Intrusive activities are defined as installing wells and gas probes; sampling groundwater, leachate, and LFG; excavating waste; regrading waste; installing LFG/leachate piping; and installing a leachate collection tank.

Modified Level D protection will consist of the following:

- Steel-toed, impervious work boots
- Hard hat (when overhead hazards exist or heavy equipment is in use)
- Hearing protection (if required as described in Subsection 4.2.6)
- Eye protection with permanently mounted side shields
- Disposable nitrile or Silvershield gloves, vinyl inner gloves (when contact with contaminants exists)

Table 7-1
Criteria for Changing Protection Levels

CHANGE	APPROVALS REQUIRED		
	HSR	HSC	CHSM
All nonintrusive work will be conducted under Level D protection at a minimum.	☐	☐	☐
Intrusive work will be conducted in Level C. When RMT air monitoring indicates total particulate levels below 15 mg/m^3, respirable particulate levels are below 5 mg/m^3, and ambient PID levels are below 5 units above background, the HSR may downgrade to modified Level D. When instrument readings are greater than background with the organic vapor monitor, colorimetric tubes will be used to check for the specific presence of benzene, vinyl chloride, and phenol. If benzene levels are above 1 ppm, Level C protection will be used. If vinyl chloride levels are above 1 ppm, Level C protection will be used. If phenol levels are above 5 ppm, Level C protection will be used.	☒	☒	☐
When air monitoring indicates 10 ppm vinyl chloride, 50 ppm benzene, or 63 ppm total VOCs (based on PID or FID monitoring) Level B protection will be used.	☐	☐	☒
When flammable gases are present at or above 10% of the LEL or oxygen levels are found at or below 19.5%, the site will be evacuated.	☒	☐	☒

- Tyvek® suits or impervious apron and sleeves (when the potential for skin or clothing contact with contaminants exists)

All intrusive activities will be started in Level C protection. Level C protection will consist of the following:

- Full-face, air-purifying respirators with a combination organic vapor/HEPA respirator cartridge
- Steel-toed impervious work boots
- Hard hat (when overhead hazards exist or heavy equipment is in use)
- Nitrile or Silvershield outer gloves
- Vinyl inner gloves
- Polyethylene-coated Tyvek® suits
- Hearing protection (if required as described in Subsection 4.2.6)

Level B protection will be worn when the highest level of respiratory protection is needed. Level B protection will consist of the following:

- Full-face, self-contained breathing apparatus (SCBA), or airline breathing apparatus with 5-minute escape bottle
- Steel-toed impervious work boots
- Hard hat (when overhead hazards exist or heavy equipment is in use)
- Nitrile or Silvershield outer gloves
- Vinyl inner gloves
- Polyethylene-coated Tyvek® suits
- Hearing protection (if required as described in Subsection 4.2.6)

7.2 Changes in Levels of Protection

The Site HSR may authorize a change in the level of protection based on an evaluation of actual field conditions after consulting with the HSC. Upgrades in protection will be at the HSR's discretion, while downgrades must be approved by the HSC (refer to Table 7-1). Should site conditions indicate Level B protection is necessary, all work will stop until site conditions and personal protection are re-evaluated or until the RMT Corporate Health and Safety Manager (CHSM) determines that Level B protection is to be implemented. If possible, Level B work will be avoided.

Air monitoring data and criteria may reveal the presence or possible presence of concentrations of air contaminants above acceptable levels for the type of respiratory protection being used. If

this occurs, the Site HSR will contact the HSC to evaluate the need to modify the level of protection required in a particular area and discuss the results of the evaluation with the PM. If changes in the level of protection are warranted, the Site HSR will inform field personnel and the RMT PM of the changes. Notifications will be made after the area has been appropriately secured.

7.3 Work Limitations

The following work limitations will apply to all field personnel working on-site:

- No smoking will be allowed in the exclusion or contamination reduction zones or additional on-site locations identified by RMT.
- No eating, drinking, or chewing gum or tobacco will be allowed in the exclusion or contamination reduction zones.
- Seat belts must be used in all moving vehicles.
- All personnel and equipment leaving the exclusion zones must be properly decontaminated prior to leaving the site. Personnel decontamination procedures are described in this document, and equipment decontamination procedures are described in the FSAP.
- When possible, on-site work will be limited to daylight hours. If work must be done at night, illumination levels will conform to OSHA Construction Standard 29 CFR 1926.56 and OSHA 29 CFR 1910.120.
- Work will be suspended if weather conditions are (1) significantly windy and dry, causing excessive levels of potentially contaminated particulates or waste to become airborne; or (2) if lightning and other storm conditions threaten worker safety.

7.4 Change-out Schedule for Air Purifying Respirator (APR) Cartridges

The following demonstrates the required change-out schedule for the use of air purifying respirators (APRs) with organic vapor cartridges:

- *Vinyl chloride* - Cartridges must be changed-out very 60 minutes. It should be noted that this calculation was made using a concentration of 10 ppm. If vinyl chloride concentrations exceed 10 ppm, APRs are not suitable for protection and RMT will require the use of SARs - Level B.
- *Benzene* - Cartridges must be changed at the end of every work shift. It should be noted that this calculation was made using a concentration of 50 ppm. If benzene concentrations exceed 50 ppm, APRs are not suitable for protection and RMT will require the use of SARs - Level B.

- Phenol and Airborne Particulate will be calculated once field air monitoring demonstrates the known concentrations using the Woods Math model. Note that, for respiratory protection against phenol, an organic vapor and particulate cartridge will be required.

Section 8
Contingency Plan

This contingency plan provides the emergency information needed should there be a sudden life- or health-threatening situation where work activities are being conducted. The provisions of the contingency plan are to be implemented immediately in the event of a fire, explosion, or accident that could threaten human health or the environment.

8.1 Emergency Contacts

Emergency contacts and telephone numbers for use in emergency situations occurring during field activities are detailed below. Telephone numbers for the contractor's project manager and HSR will be established once the RA contract has been awarded.

EMERGENCY CONTACT	TELEPHONE NUMBERS
Antioch Fire Department (ambulance)[1]	911
Antioch Police	911
St. Therese Area Treatment Satellite[2]	(847) 356-6600
IEPA - Land Pollution Control Division	(217) 782-6761
IEPA Emergency Removal Unit	(217) 782-3637
Illinois Emergency Service Disaster Agency	(800) 782-7860
National Poison Center	(800) 942-5969
National Response Center	(800) 424-8802
CHEMTREC	(800) 424-9300
U.S. Environmental Protection Agency Emergency Environmental Response (Chicago) Hazardous Waste Hotline	 (312) 353-2318 (800) 621-3191
Site Health and Safety Representative	to be established
RMT Project Manager Mark Torresani	(W) (608) 662-5374 (H) (608) 827-0071
RMT Midwest Region Health and Safety Coordinator Janeen McMurtrie	(W) (920) 830-0209 (Cell) (920) 858-9492 (H) (920) 982-9975
RMT Corporate Health and Safety Manager Shannon Posey	(W) (864) 236-9431 (H) (864) 898-3003 (Cell) (864) 787-7918

Notes:

(1) The Antioch Fire and Rescue Departments are separate organizations.

(2) Hospital map attached in Appendix D.
St. Therese Area Treatment Satellite
37809 North Route 59
Lake Villa, IL 60046

8.2 Emergency Procedures

If an emergency situation develops at the site, the discoverer will notify the HSR who will perform the following:

- Evacuate visitors and nonessential site personnel from the site.
- Notify any other affected personnel at the site.
- Call 911, and give the operator the location and nature of the emergency. The operator will notify the proper emergency services (fire, ambulance, police, etc.) for assistance. The HSR will answer all of the operator's questions and will let the operator hang up first.
- Determine and initiate (if necessary), in conjunction with emergency personnel, evacuation of residents in the surrounding community.
- Contact the HSC to inform him/her of the incident as soon as possible.
- Contact the RMT PM to inform him/her of the incident as soon as possible.
- Prepare a written summary report of the incident and an Initial Report of Incident form (Appendix E) for the RMT HSC as soon as possible, but no later than 24 hours, after the incident.
- Take appropriate corrective actions at the site prior to authorizing the continuation of work.

If the HSR is not available, the person discovering the emergency situation will initiate the above actions.

8.3 Medical Emergency

If a first aid or medical emergency occurs, the person should be transported to the St. Therese Area Treatment Satellite, 37809 North Route 59, Lake Villa, Illinois. A map illustrating the emergency route to the hospital is contained in Appendix D. Employees trained by the American Red Cross in first aid and CPR can administer first aid and CPR, if necessary. RMT employees will comply with the RMT Bloodborne Pathogen Program to properly protect themselves from potential contact with bloodborne pathogens, and to properly dispose of any waste generated.

8.4 Fire Emergency

RMT personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt as to whether a fire can be quickly extinguished, site personnel will immediately notify the site HSR. The HSR will call the City of Antioch Fire Department, and staff will evacuate the site. The site HSR will ensure that fire extinguishers are present at the site and that they are in compliance with the rating specified by OSHA 1926. At a minimum, two on-site

staff members will have current training in fire extinguisher use. Portable fire extinguishers kept for on-site use will meet or exceed the requirements of OSHA 1926.

8.5 Spill Prevention and Containment

Staff will take precautions to avoid loss of sample media, decontamination fluids, sample preservative fluids, and other potentially hazardous materials. Please note that RMT staff will handle only relatively small quantities of these materials. All materials must be handled carefully. When applicable, plastic sheeting should be used to protect the ground surface from spillage. If a spill occurs, materials will be cleaned up immediately using hand tools. Wastes will be temporarily stored in buckets with lids or in drums prior to disposal at the on-site waste reconsolidation area. Personnel conducting cleanup activities should already be wearing PPE appropriate to the quantity and type of material affected, since they were in potential contact with it prior to the loss.

8.6 Emergency Equipment

Emergency equipment that will be available on-site with field personnel will include the following:

- First-aid kits/Bloodborne pathogen kits
- Eyewash (squeeze bottle)
- Fire extinguishers
- Five gallons of fresh water (for flushing of skin, general washing)

8.7 General On-site First Aid

The following discusses general on-site first aid procedures for exposure to contaminants on-site:

- *Contaminated material in eyes* - Wash with copious amounts of water for at least 15 minutes. Lift upper and lower lids occasionally. Seek medical attention immediately.
- *Contaminated materials that contact skin* - For organic materials, promptly wash area with soap or mild detergent and water. For corrosive materials, flush with water for at least 5 minutes. Do not rub. Check for signs of skin irritation. Seek medical attention if unusual appearance of skin or sensation is noted.
- *Contaminated materials that penetrate protective clothing* - Discard protective clothing and underlying clothing. Wash skin as described above. Confer with HSC in selection of new protective clothing.
- *Inhalation of contaminated air* - Move person to well ventilated area at once. If individual is not noticeably affected, and has no side effects after 15 minutes, returning to work is allowed, providing that staff are adequately protected from contaminants. If the individual

has not fully recovered, continue to monitor for 15 to 20 additional minutes and seek medical attention if necessary. Use artificial respiration if breathing has stopped. In such instances, seek medical attention after victim has resumed breathing. If possible, have someone seek medical attention while person is being resuscitated.

- *Ingestion of contaminated materials* - Flush mouth with water, being careful not to swallow. Contact local poison center (see telephone number in Emergency Response and Information section). When called for, induce vomiting and give fluids (preferably water) to drink. (DO NOT induce vomiting or give fluids to an unconscious person.) Seek medical attention promptly.

If, at any time, personnel feel fatigued, dizzy, nauseated, or experience headaches, they are to be moved to a well-ventilated area and allowed to rest for 15 to 30 minutes. If symptoms do not subside, seek medical attention. Should personnel exhibit symptoms of temperature stress, follow the guidelines for treatment contained in Subsection 4.2.7 of this plan.

8.8 Emergency Route

Appendix D contains a map of the emergency route to the hospital.

Section 9
Record Keeping

This section discusses the records that will be maintained as part of this Health and Safety Plan.

9.1 Training Attendance

A copy of each employee's certificate verifying the completion of the 40-hour Health and Safety Training for Hazardous Waste Sites is maintained in the employee's personnel file. Each employee retains the original certificate issued.

Site-specific health and safety plan review is documented by a sign-in sheet. The sign-in sheet is kept in the project file and is included as Appendix F.

9.2 Respirator Fit Test

For RMT personnel, copies of respirator fit testing forms containing the employee's name, the protocol used, the respirator tested, and the fit test results are distributed as follows:

- One copy to the employee
- The signed original filed in the personnel file

9.3 Medical Certification

RMT personnel receive periodic physical exams to determine their ability to wear a respirator and /or SCBA unit and perform required job functions. The physician conducting the examination must provide a certification of medical fitness for the tasks described and any work restrictions or limitations the employee may have. A copy of this certification and the employee's medical information is maintained in the employee's personnel file.

9.4 Air Monitoring Results

In-field measurements of airborne contaminant concentration levels will be recorded by the person making the readings in the field log book noting names of personnel potentially exposed, the date, the time, the location, the work task being performed, the concentration level measured, and any observations.

9.5 Chain-of-Custody and Hazard Communication

Material Safety Data Sheets (MSDSs) will be maintained on-site for all potentially hazardous materials brought to, and used, at the site (e.g., acid preservatives, bentonite clay, concrete,

calibration gases, etc.). The MSDSs will be kept in a folder in the support zone for reference. Staff will be current for Hazard Communication Training.

All samples will be maintained and shipped under chain-of-custody procedures; and waste materials will be manifested, as applicable. Staff will be updated in daily meetings on site conditions, including expected and observed concentrations of hazardous materials in solids, liquids, and fluids to be encountered during daily activities.

Section 10
References

Occupational Safety and Health Administration (OSHA) standards, 29 CFR 1910 and 1926, including 29 CFR 1910.120.

Montgomery Watson. 1997. Remedial investigation/feasibility study. H.O.D. Landfill, Antioch, Illinois. January 1997.

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RMT, Inc. 2000. Predesign investigations, groundwater. In preparation.

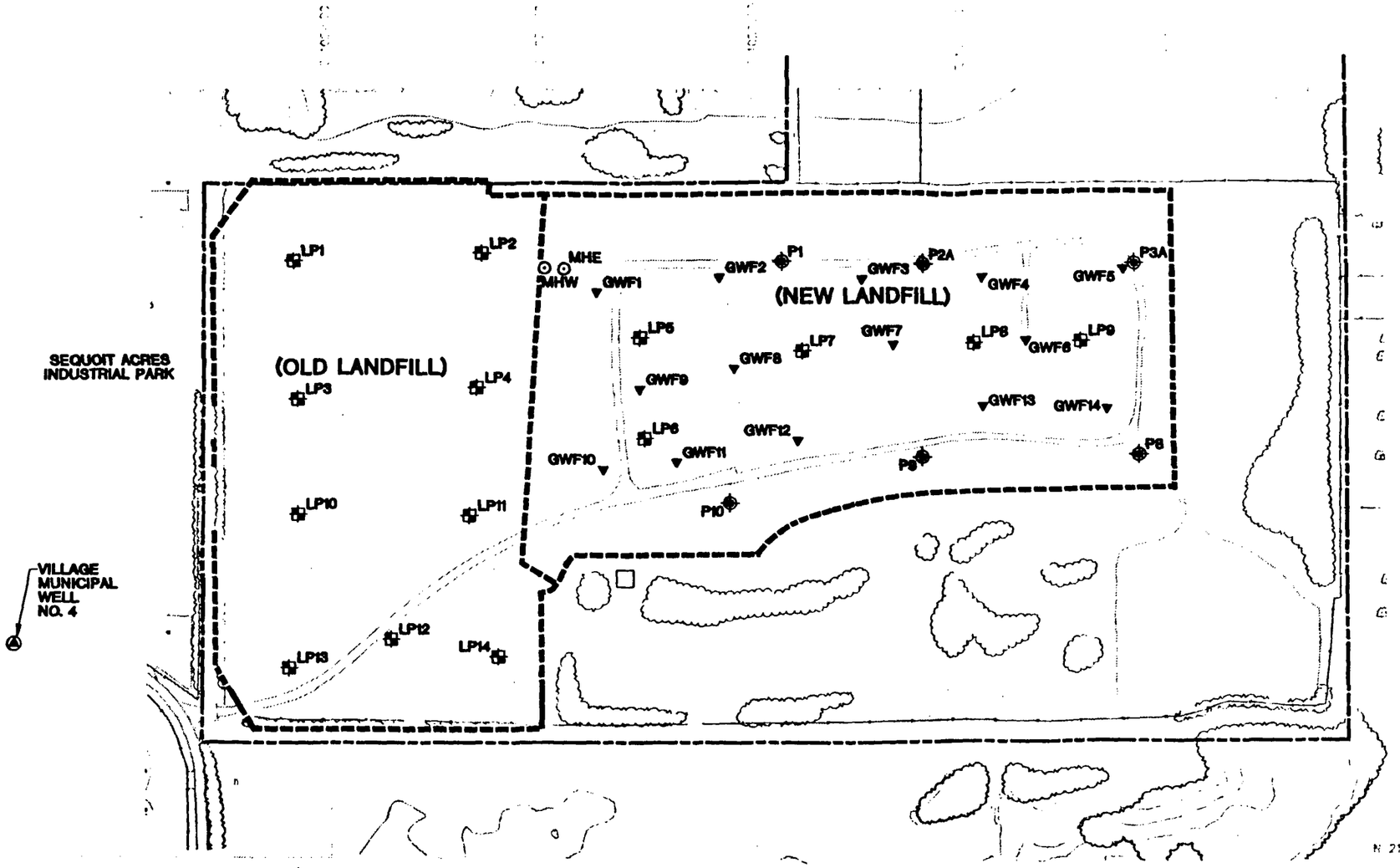
USEPA. 1992. Standard operating safety guides. Publication 9285.1-03, PB92-963414. Washington, D.C.: Office of Emergency and Remedial Response. June 1992.

USEPA Region V. 1998. Declaration for the record of decision, H.O.D. Landfill, Antioch, Lake County, Illinois.

USEPA Region V. 1999. Unilateral administrative order for the H.O.D. Landfill Superfund Site, Village of Antioch, Lake County, Illinois.

Willman, H.B., E. Atherton, T.C. Buschbach, C. Collinson, J.C. Frye, M.E. Hopkins, J.A. Lineback, and J.A. Simon. 1975. Handbook of Illinois stratigraphy. Illinois State Geological Survey Bulletin 95. Urbana, Illinois.

Appendix A
H.O.D. Landfill Site



LEGEND (EXISTING)

- APPROXIMATE PROPERTY LINE
- APPROXIMATE LIMITS OF LANDFILLED AREA
- TOPOGRAPHIC CONTOUR LINE
- TREES, BRUSH
- BUILDING
- FENCE LINE
- MHW/MHE — LEACHATE COLLECTION MANHOLE WEST/ LEACHATE COLLECTION MANHOLE EAST
- GWF1 — GAS FLARE LOCATION AND NUMBER
- LP8 — WARZYN LEACHATE PIEZOMETER LOCATION AND NUMBER
- P2A — LEACHATE EXTRACTION WELL LOCATION AND NUMBER

NOTES

1. TOPOGRAPHIC SURVEY DATA FROM AERO-METRIC, INC.. DATE OF PHOTOGRAPHY: MARCH 4, 1999.

0 300 600

SCALE: 1"= 300'

H.O.D. LANDFILL SITE

RMT, INC.

DWN. BY:	STORMERL
APPROVED BY:	JMT
DATE:	APRIL 2000
PROJ. #	5314.07
FILE #	53140705.DWG

APPENDIX A

Drawing Name: j:\05314\07\53140705.dwg
Operator Name: STORMERL
Scale: 1"=300'
Plot Date: Wednesday, April 26, 2000
Plot Time: 07:12:08
Attached Xref's: XREF1:

Appendix B
Lyme Disease

LYME DISEASE

Lyme disease is an illness that, if not diagnosed and treated promptly, can cause serious problems involving the heart, joints, eye, and nervous system. Lyme disease was officially recognized in the United States in 1975 in children from Lyme, Connecticut. Lyme disease is transmitted to people and animals by the bite of the deer (bear) tick (usually in the Midwestern and eastern coastal states) or the western black-legged tick (usually in the western states), but other tick species are suspected carriers. Adult deer ticks are very small (about the size of a pencil point).

Signs and Symptoms of Lyme Disease

Lyme disease typically progresses through three stages.

Stage 1

In the earliest stage, people with Lyme disease may have any combination of the following signs and symptoms:

- Headache
- Chills
- Nausea
- Fever
- Spreading rash (ECM)
- Aching joints
- Fatigue

Without treatment, these signs and symptoms may disappear altogether, or they may recur intermittently for several months. The red rash, called erythema migrans or erythema chronicum migrans (ECM), usually appears within 3 to 32 days after a person is bitten by an infected tick. The rash is circular in shape and can attain a diameter of 2 to 20 inches. The center of the rash becomes clear, giving the characteristic appearance of a "bulls-eye." More than one lesion can occur on the body. Up to 30 percent of the people who have Lyme disease do not develop ECM lesions, making diagnosis more difficult. If Lyme disease is diagnosed during Stage 1, it is usually easily treated with antibiotics.

Stage 2

Weeks to months after the initial bite, some people may develop complications involving the heart and/or nervous system, such as varying degrees of heart blockage, meningitis, encephalitis, and facial paralysis (Bell's palsy). Painful joints, tendons, or muscles may also be noted during this stage of the disease.

Stage 3

Arthritis is the most commonly recognized long-term sign of Lyme disease. Research has shown that, even if Lyme disease was not diagnosed and treated promptly, people who eventually received appropriate antibiotic therapy had fewer relapses than those who were never treated.

Removing Ticks

The best way to remove a tick is to grasp it with tweezers as close to the skin as possible and gently, but firmly, pull it straight out. Do not twist or jerk to avoid leaving the head of the tick imbedded in the skin (which may then have to be surgically removed). Wash the bite area and your hands with soap and water and apply an antiseptic to the bite site.

LYME DISEASE

Lyme Disease in Domestic Animals

Lyme disease has been diagnosed in over 40 breeds of dogs. Signs in dogs may include various combinations of the following:

- Fever of 103-106°F
- Severe pain
- Sudden onset of lameness
- Poor appetite
- Intermittent lameness for weeks or months
- Signs of illness observed within a few days or up to several months after initial exposure

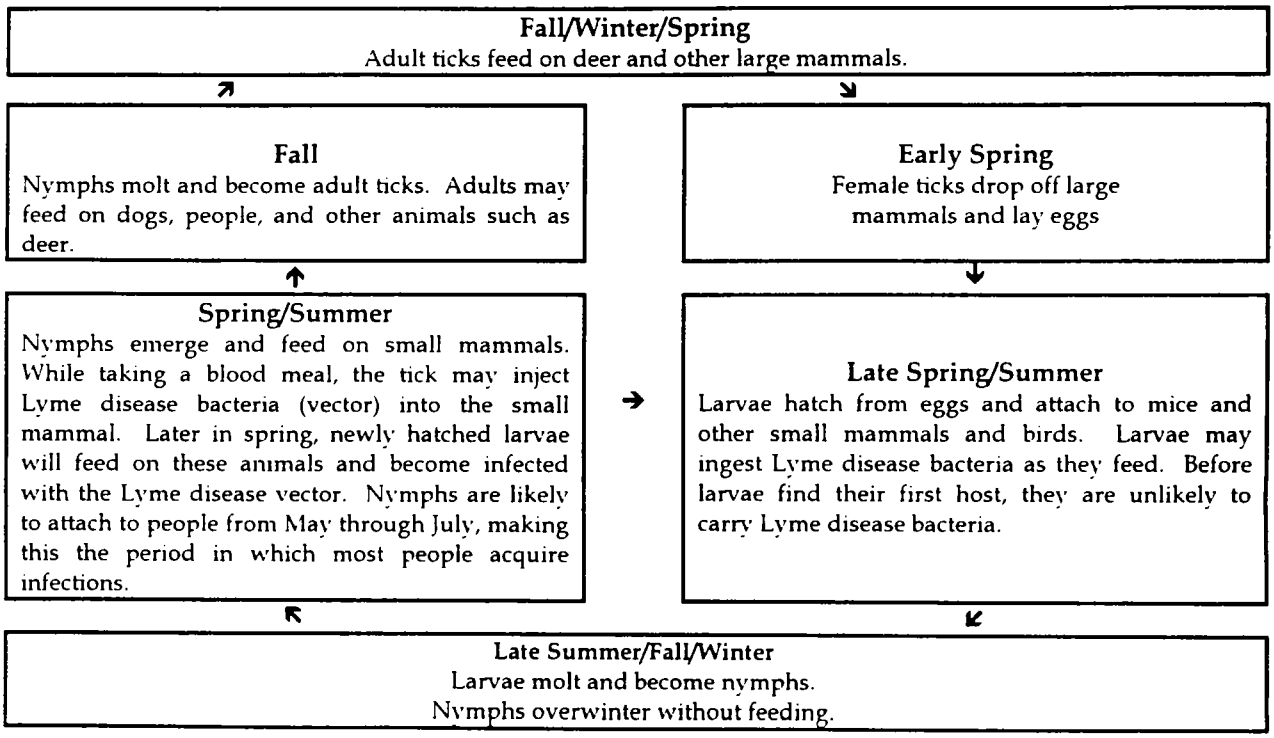
Cattle and horses can also contract Lyme disease. They may exhibit a variety of signs, including fever and lameness.

Prevention

By routinely checking for ticks (adults as well as other life stages) after being outdoors, you can remove them before they embed and have the chance to transmit Lyme disease.

1. Conduct thorough tick checks on yourself, your children, and your pets after spending time outdoors.
2. Wear light-colored clothing. This may not deter ticks, but it makes them easier to find.
3. Ticks wait atop of grasses and other vegetation until something brushes against them.
4. Apply tick/insect repellent to pants, socks, and shoes as well as skin (30% DEET and permethrin are recommended).
5. Always walk in the center of mowed trails to avoid brushing up against vegetation.

Tick Life Cycle



Paraphrased from "Lyme Disease in Wisconsin: An Update" published by Wisconsin DNR and Dept. of Health and Social Services.

Appendix C
Poisonous Plants

Poisonous Plants

Poison ivy, poison oak, and poison sumac are the three most common urushiol (poisonous, irritant liquid)-containing plants in this country. Each year, they cause almost 2 million cases of a dermatitis that can be extremely distressing. Urushiol poisoning is the greatest single cause of Worker's Compensation claims in the United States.

The common poison ivy (Toxicodendron radicans), in six subspecies, thrives from southern Maine to Florida and as far west as Nebraska, Kansas, Oklahoma, and Texas. It can also be found near the Mexican border in eastern Arizona and western New Mexico. Humid weather and rich, damp soil favor its spread; but it can persist in what might seem rather daunting circumstances.

Rydberg's poison ivy (Toxicodendron rydbergii) is the most northerly ranging species of poison ivy and can generally be found in moist habitats in the northern and mountain states.

Poison oak is a woody plant that grows in dry barren areas from southern New Jersey to northern Florida and as far west as Oklahoma.

Pacific poison oak, as the name implies, is found in California, Oregon, and Washington. It has adapted to a wide range of habitats from rich loam soil to rock crevices and can be found from sea level to about 5,000 feet above sea level.

Poison sumac is usually found along the margins of swamps and bogs, where the soil is acid and wet. The shrub can grow to 20 or more feet high and is never found in the vine-like form of its ivy relatives. Poison sumac shrubs in dry soil are stunted but are just as poisonous as the larger version. They look harmless and poison the unwary.

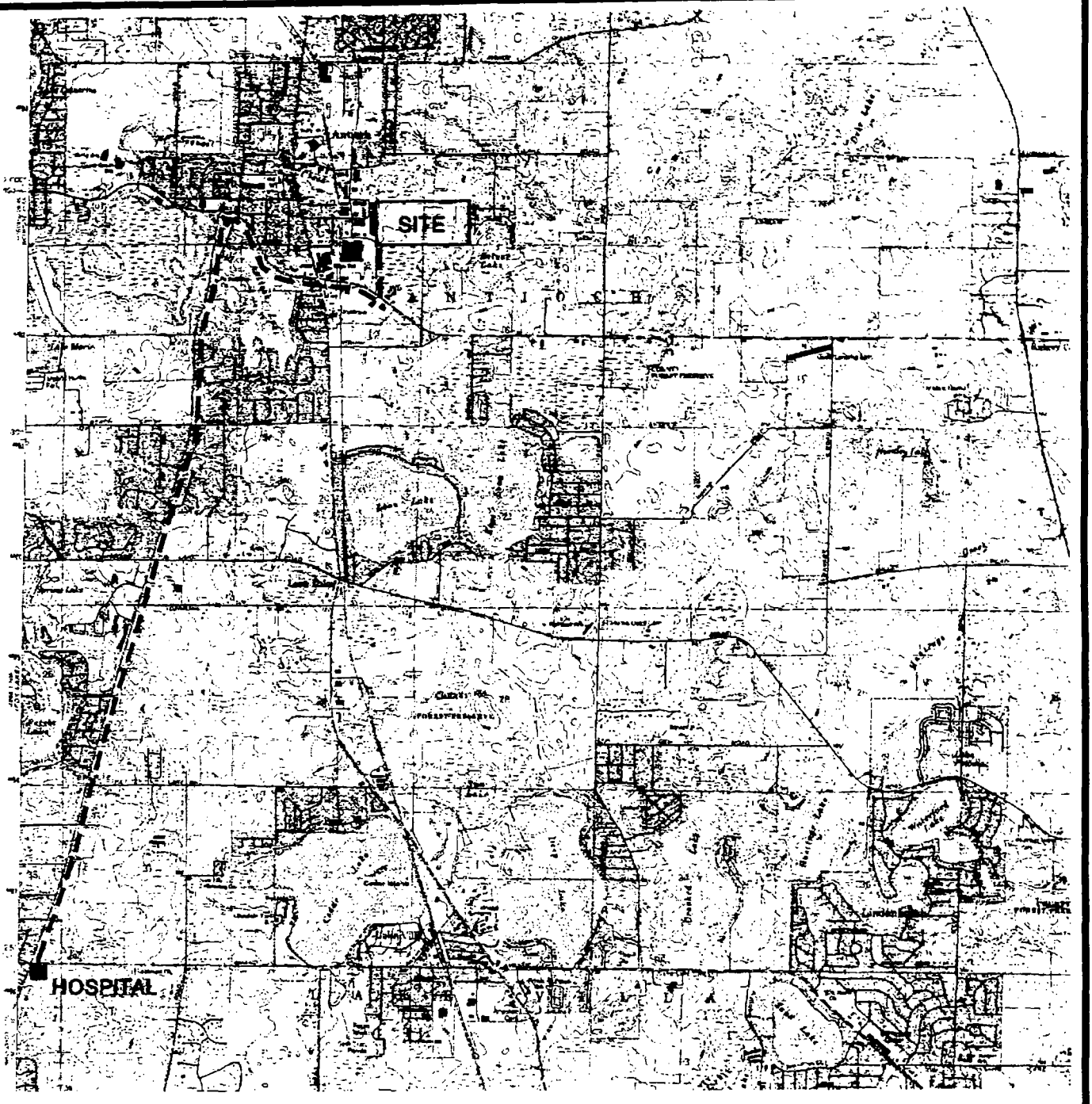
The key to protection from urushiol is the ability to recognize and avoid the plants that carry the poison. The folk wisdom "Leaflets three, let it be" is a good rule for the inexperienced, but alert those assigned to work near any vegetation. All the plants mentioned except poison sumac have three-leaflet stems. The two-side or lateral leaflets appear to be symmetrical and they grow close to the stem, while the end leaflet is distinct and alone. Poison sumac can have 7, 9, 11, or 13 leaflets; these also grow in symmetrical pairs close to the stem, except for the one at the end. The odd numbers between 7 and 13, the symmetrical pairing, and the isolated end leaflet should allow the worker to be able to group poison sumac with its evil relatives and avoid them all.

In the rare instance where contact with urushiol-bearing plants cannot be avoided, the worker must take extreme precautions to prevent direct or indirect contamination. Ordinary work trousers tied at the boot mouth, a long sleeved shirt and long gloves will usually protect against direct contamination of the skin, but protection against indirect contamination requires great vigilance. A casual wipe of a contaminated glove against the head can cause the characteristic rash and a breath of smoke from burning urushiol-containing trash can inflame the mouth, nose, throat, and lungs. Clothing and tools can remain contaminated for years after being in contact with a urushiol-producing plant. Washing contaminated clothing and contaminated surfaces with large amounts of cold water is the easiest way to get rid of urushiol.

(Taken from: Mine Safety and Health Administration - Health Hazard Information)

Appendix D
Hospital Emergency Route Map

RMT COMPUTER AIDED DESIGN & DRAFTING



PLOT DATA
Drawing Name: J:\05314\07\53140701.dwg
Operator Name: STORMERL Dwg Size: 4,3497 Bytes
Scale: 1"=1" Attached Xref's: No xref's Attached.
Plot Time: 07:06:2528 AM
Plot Date: Wednesday, April 26, 2000

DIRECTIONS FROM SITE TO HOSPITAL

TAKE McMILLAN ROAD SOUTH TO 173. TAKE 173 WEST (RIGHT) TO ROUTE 59. TAKE ROUTE 59 SOUTH (LEFT) APPROXIMATELY 4.5 MILES TO ST. THERESE AEA TREATMENT SATTELITE ON EAST (LEFT) SIDE OF ROUTE 59 JUST SOUTH OF ROUTE 132 (GRAND AVENUE). USE SOUTH ENTRANCE.

HOSPITAL ADDRESS

ST. THERESE AREA TREATENT SATTELITE
37809 NORTH ROUTE 59
LAKE VILLA, ILLINOIS 60046
TELEPHONE: (847)356-6600

N

(NOT TO SCALE)

HOSPITAL EMERGENCY ROUTE MAP

H.O.D. LANDFILL
ANTIOCH, ILLINOIS

RMT INC.

DWN. BY:	STORMERL
APPROVED BY:	JMT
DATE:	APRIL 2000
PROJ. #	5314.07
FILE #	53140701.DWG

APPENDIX B D

Appendix E
Incident Forms

RMT

Health & Safety Plan
Initial Report of Incident

1. Type of Incident

☐ Injury/exposure only ☐ Property loss only ☐ Injury and property loss ☐ Reportable incident without injury or property loss

Project Number:	Project Name:	Date of Incident:	Time: ☐ AM ☐ PM

Incident Location:

Name(s) of witnesses to incident, if any:

If incident caused death or serious injury, this report must be called in to the Health & Safety Director and Human Resources Manager *immediately*!!!

2. Injury/Exposure For *any* injury, a "First Report of Injury" form must also be completed. This is available from Human Resources.

Injured employee's full name:	Did injured see a doctor? ☐ Yes ☐ No

Name and address of treating doctor (and hospital, if one was used):

Describe affected body part and the type/degree of damage or exposure:

3. Incident Description and Analysis

Give detailed description of incident (attach additional pages if necessary):

Provide an explanation if the incident was associated with the following:

Job factors:

Personal factors:

Unsafe conditions:

Unsafe practices:

Other:

Have similar incidents occurred before? ☐ Yes ☐ No ☐ Don't know

Why?

4. Property Damage/Loss/Theft

Exactly what was damaged, lost, or stolen?

Was this reported to police? ☐ Yes ☐ No If yes, list departments involved:

Describe amount of damage/lost/theft:

5. Action Items

List actions which could be taken to prevent the occurrence of this incident in the future, or to minimize the effects of future incidents.

6. Signature

Name of person completing this form: Office Location: Date:

Signature of person completing this form:

Send this report to the Health & Safety Coordinator who will provide copies to the Corporate Health & Safety Manager, Project Manager, Department Manager, and/or Human Resources Manager, as required.

This report does not replace a Worker's Compensation (First Report of Injury) or Insurance Claim form which may need to be completed for Human Resources or Loss Prevention.	**Office Use Only** Reportable: ☐ Yes ☐ No

Acknowledgement Statement:

I have reviewed the Hazard Assessment and Site Health and Safety Plan. I hereby acknowledge that I have received the required level of training and medical surveillance, that I am knowledgeable about the contents of this site-specific Health and Safety Plan, and that I will use personal protective equipment and follow procedures specified in the Health and Safety Plan.

Signatures of Site Personnel (required):

_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____
_____	Date:	_____